The Effect of Pension Income on Mortality
Evidence from Civil War Confederate Veterans

Mayvis Rebeira, PhD
Center for Global Health Research
University of Toronto

Differences in pension income legislations in the Southern States post-Civil War offer a unique and natural experiment to study the effect of differences in pension income on mortality rates. In this study, Confederate pensions in two adjacent states, Texas and Oklahoma, which enacted pension laws for veterans in 1889 and 1915 respectively, were examined. Since Confederate pensions represent a significant source of permanent, steady income for the veterans, the study was able to determine the role of newly-endowed wealth on longevity with pension laws providing for the exogenous variation in income. Data was collected through primary means mainly from archival records from multiple sources to create a unique database of births and deaths for both States. The results reveal veterans in Texas gained nearly 1.3 years (or 15.6 months) of additional years of life, as compared to veterans in Oklahoma. In addition, for every $10 increase in pension income, there was a 0.87% increase in years of additional life and 1.61% increase in years of life, if county-level controls are taken into consideration. The effect of an increase in pension income on longevity is substantial and significant which reveal that circa 1900, income effects were large.

Introduction

Mortality rates have shown a steady decrease since 1830s, continuing through the Industrial Revolution (Oeppen 2002), a period that corresponded with an acceleration of scientific and technological advancements, as well as population growth and increased life expectancy. In the U.S., life-expectancy at birth increased from thirty-eight years in 1850 to seventy-one years in 1982[1]. The literature has emphasized the impact of factors such as living arrangements, city size, early-life health, medical advances and public health initiatives, such as vaccinations and personal hygiene. How does income fit into this explanation of longevity?

An examination of the pension laws of 1907 and 1912 in Northern shows that Union Army veterans who received pension income experienced an increased life expectancy of 0.8 years and 2.3 years respectively (Salm 2011). An investigation of patronage politics during this same period also shows that an increase in pension income reduces mortality for Union Army veterans (Eli 2011). Building upon this research, I examined how income affects mortality in the late 19th and early 20th century using evidence from pensions of Confederate veterans of the Civil War. Specifically, I make use of the exogenous variation in pension income levels between Texas and Oklahoma as a result of differences in their respective pension laws.

The evolution of the pension income system took two different routes for the Union Army and Confederate veterans. In the North, the federal government enacted the General Law of 1862, which provided pensions for all disabled Union Army soldiers, as well as for widows and orphans of deceased soldiers. The subsequent Pension Dependent Act of 1890 removed the disability criteria which enabled all veterans to apply. These pension laws were applied universally across all states in the Union, regardless of the veteran's state of enlistment or residence. Furthermore, Union army pension records were centralized at and maintained by the federal government.

Confederate veterans, on the other hand, were not included as part of this pension program. Instead, pension laws were enacted separately by each state in the South, and provided varying amounts of income to veterans depending on their state of residence. Pension income data

resided in each state's respective archives, rather than with the federal government, resulting in a lack of an accurate, comprehensive source for health and pension income data for Confederate veterans.

Using previously collected and new data on Confederate veterans from Oklahoma and Texas, an adapted Grossman model was used for the theoretical framework for the study. The theoretical framework was based on Ehrlich and Chuma's adapted Grossman model (Ehrlich, 1990), a theory of the demand for life extension under certainty. It shows that an upward shock in endowed wealth or initial endowment increases longevity. The access or increase in pension income represents an increase in initial endowment. Pension income can be regarded as a form of wealth, as it is guaranteed income that lasts ones entire lifetime irrespective of any's ability to earn wages. Pension income therefore increases the entire path of health stock thereby increasing years of life and reducing mortality rates.

Since Confederate pensions represent a significant source of permanent, steady income for the veterans, I am able to determine the role of newly-endowed wealth on longevity. Further, the differences of pension laws between these two States (both in terms of timing and levels of pension income), enabled reverse causality issues between income and health to be overcome. In order to isolate the effect of increased income on health, the exogenous change in pension income levels between Texas and Oklahoma was used in the analysis, as a result of different pension laws between the two states. These veterans are otherwise similar because they faced similar exposure to wartime risks, climate, infectious diseases and other environmental hazards. Further, Texas was one of the main supplier of soldiers in the Confederacy — the regiments fought in nearly all the main battles in the South, including Oklahoma. This potentially reduces the unobserved differences in characteristics between the two veteran populations.

Regression analysis was used to estimate the mean differences in additional years of life gained by the veterans from the two states while controlling for the year of birth (as many diseases tend to worsen with age) and other county-level socio-economic variables obtained from ICPSR county-level data. The results showed that veterans in Texas gained nearly 1.2 years of additional years of life compared to veterans in Oklahoma, due to differences in pension income received between the two groups. I also found that for every $10 increase in pension income (with increases based on average pension amount received by the veteran in the past ten years), there

was a 0.87% increase in years of additional life and 1.61% increase in years of life if county-level controls are taken into consideration.

Literature

The literature in this area is wide-reaching, involving many cross-over with disciplines such as history, epidemiology, demography, sociology, history and biology, and provides insight on how socio-economic factors effect mortality over time. The role of income on mortality was described by Preston (1975) through the curvilinear association between life expectancy and income, as measured by GDP per capita. It is estimated that income increases explain about 15% of the rise in life expectancy, with public health initiatives accounting for the rest. Investments in health have also been hypothesized to be correlated to income (Newhouse 1997). The interconnectedness among life expectancy, income and health investments has made this area of study complex. Income has been postulated to affect longevity through several different causal pathways (Salm 2011). These mechanisms include nutrition (McKeown 1976; Fogel 2004), wherein individuals who had increased income were able to purchase a greater quantity of nutritious food, which, in turn, may have made them more resistant to infectious diseases. Another explanation could be that higher-income individuals can choose to remain in retirement, which may improve their health (Ruhm 2000). Psychosocial stress has also been noted as a possible pathway, wherein low socio-economic status can lead to increased stress (Marmot, 1991) as seen in the study of British Civil service where health was strongly associated with rank. From an economic point of view, higher income increases veterans' ability to invest in more and better health care, which eventually leads to better health and reduced mortality (Grossman 1976).

The role of pension income on morbidity and mortality was recently explored in greater detail by Eli (2011), who explored the role of increased income on adult health in late 19^{th} and early 20^{th} century. Using exogenous variation in pension income, Eli showed that an increase of $1 of monthly pension income lowered the probability of infectious disease onset by 38%. Eli & Salisbury (2014) used individual-level administrative records of applications to Confederate pension programs in the South and found that patronage policies was the key factor in guiding

the development of Southern cash transfer programs. Democratic candidates passed the Confederate pension programs as a way to obtain rural veterans' votes.

Salm (2011) examined changes in pension laws that granted old-age pensions to Union Army veterans. Salm found that life-expectancy of veterans who received pension income under the pension laws of 1907 and 1912 increased by 0.8 years and 2.3 years respectively, while the effect on longevity was large across all wealth groups and across all city size. Further, pension income reduced mortality for all causes of death including acute and non-acute causes. Logue (2004) analyzed a sample of Union Army veterans until 1907 (when pensions became universal), and found that veterans with more generous pensions were less likely to die than were their peers. Green (2006) showed that Southern states used their Confederate pension program to support party politics. Short (2006) found that the percentage of men in the labour force aged 65 years and older declined during the twentieth century. Using data from the Georgia Confederate pension program, Short cites regional factors, such as the shift out of farming occupations, as the major determinant of retirement rates, rather than access to retirement pensions. Compared to the North, the availability of pensions had a greater impact on retirement rates for Confederate veterans.

Pension Evolution

Nearly 2.8 million men and a few hundred women served in the Union and Confederate armies during the US Civil War. It is commonly estimated that 618,222 men perished in the war; 360,222 from the North and 258,000 from the South. Recent estimate of Civil War deaths are placed at 716,000 white men, with an estimated upper bound of as many as 851,000 deaths and 36,000 black men based on estimates from the War Department. Deaths were more often the result of widespread infectious diseases in the camps, rather than combat injuries. Smallpox was considered the most common of infectious diseases with an estimated of 4,700 deaths, while an estimated 4,900 died from the measles. Similar infectious disease death rates for Confederates soldiers were not recorded, though mortality rate was shown to be higher in the South (13.1%) than those born in the North (6.1%) (Hacker 2011).

The United States started a limited pension system for soldiers and their dependents at the end of the Revolutionary War. The pension system was subsequently expanded considerably during the Civil War years for the Northern states, and was used as incentive to recruit men to volunteer for the Union Army, as conscription was not implemented until 1863. The need for volunteers resulted in Congress passing the General Law on July 22, 1861, which provided pensions for disabled veterans as well as for widows and orphans of diseased soldiers. The law was updated on July 14, 1862 —this statute stated that only soldiers who suffered a disability as direct consequence of the war activities were eligible for pension benefits. The amount depended on the soldier's military rank and level of disability. Similarly, the pensions given to dependents of soldiers who passed away would be similar to the pension amount received by the veteran; there was no separate category for widows or other dependents. In 1873, widows were able to receive additional income for each dependent child under the age of 16 years of age. In 1890, due to strong lobbying of the veteran's organization, the Dependent Pension Act was enacted to remove the link between pensions and disabilities tied to the war. As a result, any soldier who had served honorably was eligible for a pension. Pensioners were eligible to receive up to $12 per month and not less than $6 per month.

The Pension Dependent Act of 1890 also extended benefits to those who could prove that they were the widows of honorably discharged veterans serving the Union for at least ninety days during the Civil War. A widow also had to provide proof of the soldier's death, unless it resulted from his military service. An applicant could not have any means of support other than her day labor, and her marriage to the soldier must have occurred before 17 June 1890. In 1906, the pension system was further liberalized so that old age alone was sufficient reason to receive a pension. Pension rates increased to $13 up to $30 in 1912 (Act of May 11, 1912) depending on age and length of service. Pensions continued to be provided into the middle of the twentieth century. The pension system accounted for nearly 50% of the total budget – a high expense in a war that was itself extremely costly both in money and lives.

In the South, the evolution of the pension system took a different turn. After the war ended, the Southern states were left devastated mainly due to the 'scorched earth' policy of William Sherman, the Union military chief who destroyed Southern livestock, farming equipment and railroads as his army retreated from the South upon winning the war. The Southern states tried to recover after the war by rebuilding the railroads and cotton industry, but the restrictive tariffs set

by the North delayed development for decades. Aid was provided to newly freed slaves through the building of new schools and hospitals, however, many of the former slaves found themselves in sharecropping arrangements, rather than as landowners.

The period of Reconstruction lasted from 1865 to 1899. By 1890, nearly all Union Army veterans had access to pensions, provided they had served 90 days or more in the military. In the South, the Confederacy was dissolved — this resulted in the absence of any central government agency to distribute pensions. Some Southern politicians tried to extend Union Army benefits to Confederate veterans by arguing that Southern states contributed to the Union Army pension system through indirect taxation. However, Southern politicians and financially-secure Confederate veterans opposed such arrangements, as they considered reliance on federal assistance as defying the tenets of the Lost Cause. In the end, confederate veterans never moved over to the federal pension system. As a result, many Southern states enacted separate legislation to provide pensions and relief payments to the Confederate veterans and their widows. Each state enacted its own legislation, providing varying amounts of pension with different start dates and eligibility requirements. It was not until 1958 that that the federal government finally awarded Confederate pensions. Using individual-level administrative records of applications to Confederate pension programs, Eli and Salisbury (2014) found that patronage policies was a key factor in guiding the development of the Southern cash transfer program. Democratic candidates passed the Confederate pension programs as one way of procuring rural veterans' votes.

Pensions were granted to Confederate veterans and their widows and minor children by the following Southern states: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia. It has been estimated that the cumulative costs to the Southern states (excluding Oklahoma) for pensions was between $350 million to $400 million through to 1938 with the peak period of pension disbursement occurring in the 1920s.

The Indian Removal Act of 1832 resulted in Oklahoma, known as the Indian Territory, being set aside as a region for the residence of Indian tribes. The Indian Appropriation Act of 1889 subsequently allowed settlements by non-Natives. Confederate veterans were eligible to apply for a pension in Oklahoma where they currently lived, even if they had served in a unit from a different Confederate state. In order to qualify for a pension in Oklahoma, the veteran must have

been honourably discharged, and shown that he was either indigent or disabled. Oklahoma's Fifth Legislature approved the Confederate Soldiers' Pension Bill in 1915, which provided pensions for disabled and indigent Confederate soldiers, sailors, and their widows. With the passing of this law, Oklahoma became one of the last Confederate states to provide pensions to its veterans. The Act also enacted the creation of the Board of Pension Commissioners, which was vested with the authority to hear and determine all applications for pensions. (The Board voted to be discontinued in 1916 and the management placed under a salaried Pension Commissioner). Veterans had to have resided in Oklahoma for 12 months prior to the passage of the bill to be eligible for the pension.

Oklahoma approved the Confederate Soldier's Pension Bill in 1915, which enabled pensions to be provided to disabled and indigent Confederate soldiers, sailors, and their widows. For Oklahoma veterans to qualify for the Confederate pension, applicants were required to provide proof of honorable discharge and at least one year's residency in Oklahoma prior to submitting the application. In addition, they were required to provide evidence that they did not own more than $2,000 worth of property and that they earned an annual income of $500 or less. Along with formal applications for benefits, the veterans seeking pensions also had to submit "proofs of service" affidavits. The reasons provided for rejecting pension applications included: Not indigent, insufficient proof, reported as deserters, hired substitutes and not approved by county judge. The Board also monitored pensioners and can strike them off the pension rolls for the following reasons: death, removed from the state, entered Confederate Home (Ardmore), no longer indigent, unclaimed, failed to make a claim, entered hospital for insane (Norman) or remarried (for widows).

Texas generally fared better than other Confederate states including Oklahoma as no major battles were actually fought there. Its major industries — livestock and cotton — were able to recover quickly after the war. Efforts to assist the Texas veterans began relatively sooner than in other states, and included aid to elderly veterans. Texas set up of the Confederate Home for Men to house war veterans, and enacted land transfer and pension programs. The state also set aside 1,280 acres for disabled Confederate veterans due to injuries sustained in the War in April 1881. In total, over 2.6 million acres of land were granted to the Confederate veterans (Kirchenbauer

2011). The land grant system did have some issues, as many veterans sold their land grants rather than settling on the property (Miller 1966). In 1889, Texas began granting pensions to indigent or disabled Confederate veterans and their widows. Confederate veterans received pensions either on the 1st day of April or the 1st day of October of each year. Pension ended in August 31st, 1929 which was the last year where pensions were made regardless of age.

Data and Study Population

Data for both Oklahoma and Texas veterans was extracted from various primary sources to form a novel consolidated database of births and deaths of veterans in these States. This include online microfiche copies of pension applications, digitized indices set up by the State Archives and websites on dates of birth and death of these veterans. Given the different formats and sources used to compile the data, the details of each record was extracted individually to form the database containing six variables: Name of Veteran, State, Date of birth, Date of death, Pension Application Number and County. The county information enabled the records to be linked to other databases (notably the ICPSR) for demographic and economic data at the county level.

Data for Oklahoma was derived from Confederate pension file records, which were found in the pension index cards (Figure 2 and Figure 3). The digitized images for each veteran were found on the Oklahoma Digital Prairie's site, the online repository set up by archivists from the Oklahoma Department of libraries. The images of the index cards contain the following relevant data: name of the veteran, county, regiment and date of filling for pension. In most cases, the date of death of the veteran is recorded in script on the pension card as this indicated to the pension office to stop the pension payment to the veterans. In cases where date of death was omitted from the records, the ancestry.com website or to the Index to Oklahoma Confederate Pension Records developed by the Oklahoma Department of Libraries[2] was used to obtain the data.

The more challenging data to obtain for Oklahoma veterans was the date of birth. Since Oklahoma did not become a state until November 16, 1907, there was no central repository of birth records for that time period. Further, the Oklahoma pension files do not include the date of birth of the veterans. Therefore, the ancestry.com website was used to find a match for each of the veteran (based on name, state and regiment) to extract the year of birth.

Oklahoma approved the Confederate Soldier's Pension Bill in 1915, which enabled pensions to be provided to disabled and indigent Confederate soldiers, sailors, and their widows.
For Oklahoma veterans to qualify for the Confederate pension, applicants were required to provide proof of honorable discharge and at least one year's residency in Oklahoma prior to submitting the application[3]. In addition, they were required to provide evidence that they did not own more than $2,000 worth of property and that they earned an annual income of $500 or less. Along with formal applications for benefits, the veterans seeking pensions also had to submit "proofs of service" affidavits.

Oklahoma set aside $20,000 per annum for the pension program. The amount of pension was fixed at $1.66 per month or $20 per year per person. This enabled 1,000 individuals to be on the pension roll in Oklahoma. The amount was raised to $48,000 per annum in 1917. Payments of $5 were paid per quarter to eligible pensioners. The total pension budget was raised to $48,000 per annum in 1916-17. The pension amount was raised to $30 per person after July 1916.

For the Texas veterans' data, a random sample of Texas veterans' data on pension application number, date and names was extracted from ancestry.com website, placing restrictions on the time period of the study based on the selection criteria. In some cases, the birth year was also extracted based on pension file application forms (Figure 4) which provided the age of application and application date enabling the birth year to be derived or confirmed. Additional details on the pension files and details on birth year of those that were granted pension were also extracted individually by veteran name from the Texas State Library and Archives Commission.

[3] Reasons provided for rejecting pension applications included: Not indigent, insufficient proof, reported as deserters, hired substitutes and not approved by county judge. The Board also monitored pensioners and can strike them off the pension rolls for the following reasons: death, removed from the state, entered Confederate Home (Ardmore), no longer indigent, unclaimed, failed to make a claim, entered hospital for insane (Norman) or remarried (for widows).

The Archives information provided the 5-digit pension application number and the county information. A challenge in completing the Texas dataset was discerning the date of death, as the information was neither written nor collected on the pension files. As such, the Confederate graves online registry[4] was used as one source to obtain death dates where available after matching for veteran name and regiment.

The enactment of the cash pension law in Texas in 1899 granted veteran pensions starting at $22.32 per annum in 1899-1900, and increased gradually every year to $208 per annum in 1927-1928. In 1915-16, at the start of the study, confederate veterans in Texas were receiving $53.50 per year. In 1928-1929, pension rules were refined further resulting in veterans receiving $56 per quarter for the first two quarters, for the third quarter married veterans were given $150 and unmarried ones $75. In the fourth quarter, those pensioners above 75 years of age were paid $67. Pension amounts increased further from 1929 to August 1943, with veterans receiving $50 per month (for those married before Jan 1900), while unmarried veterans or those married after 1900 receiving $25 per month. Further increases were made and the last change to the veteran's pension occurred in 1957 when veteransm regardless of marital status, would receive $300 per month.

The full veteran sample dataset was linked to the 1910 ICPSR (Inter-university Consortium for Political and Social Research -Historical, Demographic, Economic and Social Data) dataset for socio-economic factors (percentage of children aged 10-14 enrolled in school, population, value of the livestock and labour expenses) at the individual county levels. The value of the livestock and labour expenses provided indication of the level of economic activity in the county. School enrollment provided an indication of the social mobility and public infrastructure available in the county. (In addition, control for year of birth of the veteran was also included to account for the increased likelihood of disease states which increases with age.). Together, this controls for the different state of development between Texas and Oklahoma. The ICPSR dataset, however, had one major limitation. It did not contain data for every single county as Oklahoma became an official state of the U.S. only in the November 1907 resulting in sparse data collection at the

[4] The Confederate Graves Registry (http://cgr.scv.org) was set up by the Sons of the Confederate Veterans to set up a searchable database of all Confederate gravesites.

county levels during this time period. To handle this limitation, the adjacent county-level information was used as a proxy.

Study Population and Empirical Strategy

The study population selected for the study are Confederate veterans who lived in the two adjacent Southern states – Texas and Oklahoma. The states were selected for the following reasons. First, the proximity of the states to each other suggest that the veterans faced similar unobserved conditions and had similar characteristics. Though Oklahoma was home to many Indian tribes who fought in the war on both sides, all the names on the study pension rolls were Anglicized names, which could indicate that Indian tribes who fought for the Confederates either did not apply for or were not approved for pensions. Texas was also considered as one of the "supply" states for the Confederate army, and many of those soldiers fought in every major battle during the war. This removed some of the possible heterogeneity between the veteran groups from these adjacent states.

Second, the two States enacted pension laws in different time periods with different pension amounts, providing the exogenous variation in pension income. Texas started providing pensions to Confederate veterans in 1889 and Oklahoma provided pensions twenty-six years later in 1915. Pension income became more generous as time progressed in Texas and by 1915, there was a wide disparity in pension income provided to the Confederate veterans between the two neighbouring states. By 1916, the annual pension amount was $63 for Texan veterans, more than twice that of the Oklahoma pension ($30 per year).

The selection criteria restricts data to pension applications between mid-1900s and 1929. Since Oklahoma only started providing pensions in 1915, the start year of the analysis was 1916. This enabled the comparison to the Oklahoma veterans, who started to receive pensions in 1915, as both groups needed to be in receipt of a pension at the start of the study period. Second, it enabled time for the system in Oklahoma to stabilize for about a year. All subjects in the study must have been alive at the beginning of 1916, when they were entered into the study. The Oklahoma veterans applied for pensions at the start of the system in 1915. The Texan veterans

started to apply in the mid-1900s due likely to more recent disability. This enables a better comparison group, as it attempts to reduce the health differences between the two groups. The study commenced in 1916, in which both groups are the recipients of pensions under the different laws.

The timeframe of the study is Jan 1, 1916 to Dec 31, 1943. The end date of the study timeframe represented the last year of death of the veterans. The dependent variable is age at time of death. The independent variables include state of residence (Texas or Oklahoma), year of birth of the veteran and age of death. County-level controls included value of livestock, county population, expenses for labour and percentage of children aged 10-14 years enrolled in school in the county.

In both these states, only veterans who were indigent or disabled were eligible to receive pension. The amount of pension received was fixed for all veterans who were eligible and increased over time. The pension amounts were not dependent on the degree of disability of the veterans; rather, they were dependent on the state pension law, which represents the source of exogenous variation in income. Veterans in the study population were subjected to two different pension laws, which impacted the amount of pension income they received over their lifetime.

I examine how the delay in gaining access to pension programs and differences in pension income affected mortality rates for eligible veterans. This is conducted by comparing the following two groups: a) a treatment group of Texas veterans who receive pension from the 1899 law and (b) Oklahoma veterans who received pension from the law of 1915.

The eligible confederate veterans in Texas started receiving pensions sixteen years earlier than the Oklahoma eligible veterans. Oklahoma veterans received pension at a rate of $20 per annum in 1915, while the Confederate veterans in Texas were receiving $53.30 per annum. For Oklahoma, this represented 17% to 21% of the total personal income per capita. Total personal income per capita in Oklahoma ranged from $94 to $114 in 1900. Total personal income per capita in Texas ranged from $136 to $138 in 1900. For Texas, the pension amount represented 38% to 39% of the total personal income. Total personal income per capita in Texas ranged from $136 to $138 in 1900 (ICPSR). Those that survived their first year in Texas have an average remaining life of 55.94 years in 1910.

According to the framework, differences in pension income increases mortality, as pension represent a permanent source of income that, in turn, will improve an individual's health through means that include affordability for better nutrition, increased calories and better living conditions (such as ability to obtain clean water and better sanitation). Increased health in turn leads to increases in life years.

There were several threats to identification. Since the study period commenced in 1916, eligible Oklahoma veterans would have just received their pensions and therefore could have been indigent or disabled from the time the war ended. The Texas veterans would have recently applied, based on their pension numbers, and were likely only recently eligible – either by becoming indigent or disabled. Otherwise, these veterans would have applied when the law was enacted in 1899. This discrepancy in pension application timing could lead to differences in the health of the two groups of veterans in the study population. However, selecting only recently eligible Texan veterans limits the amount of pensions these groups would have already received, thus lessening the cumulative impact on their health.

Second, since Oklahoma provided pensions from 1915, the veterans in the study population were older with mean age for Oklahoma veterans at 83.4 ± 6.20 years and Texas veterans at 84.9 ± 6.25 years. Based on 1910 life-tables for Northern males, those that survive to 80 years old would have average of 5.10 years of remaining life. Hence the sample seems to represent 'hardy' veterans who, despite their disability or indigent state, were extremely long-lived. The generalizability of these findings to veterans who started to receive pension incomes at a younger age remains uncertain. However, if the receipt of pension income at older age can extend longevity, it may be reasonable to hypothesize that receiving pension earlier in life should also extend longevity.

Third, the study estimates the effect of treatment on longevity where treatment refers to the receipt of a generous pension income at a younger age and the treated group are the Texas veterans. The comparison group, or untreated group, would be Texan veterans who received a lower pension sixteen years later. Since that data was unavailable, Oklahoma veterans were used as the proxy. This assumes that Texan veterans would also have lived up to the same age as Oklahoma veterans without receipt of any pension support. Hence, by virtue of the sample set,

the findings on the impact of pension income to longevity can only be confined to much older ages, rather than generalized to all pensionable ages.

Fourth, there are benefits that accrue specifically to Texas veterans. Texas joined the Union in 1845 when statehood was granted, sixty-two years before Oklahoma was granted statehood Texas subsequently seceded in 1861 to join the Confederacy. Texas still could have benefited from being part of the Union including representation in Congress and in the Senate.

Finally, Oklahoma was originally set aside for Native American tribes from the Cherokee, Chickasaw, Choctaw, Creek and Seminole nations in the South as a result of the Indian Removal Act.[5] The presence of Native American veterans could result in biased results as their mistreatment during this period could have negatively affected their health. However, as noted before, a cursory look at the names of those on the pension rolls from Oklahoma sample does not explicitly suggest Native American heritage. Still, there always remains the possibility that Native Americans may have anglicized their names for the pension application, did not apply for pensions or were denied pensions.

The base model specification is as follows:

$$Age_i = \theta_0 + \theta_1 ST_s + \theta_2 X_{cs} + \theta_3 Z_{cs} + \theta_4 U_i + \varepsilon_{if} \qquad (1)$$

In this specification, Age_i is the age of death of veteran i given that he is alive in the year 1916. ST_i indicates whether the veteran is from Texas or Oklahoma, *X* is a vector of county demographic characteristics, Z is a vector of county economic characteristics and U is the birth year of the veteran. I used Ordinary Least Squares (OLS) method to estimate equation (1) to obtain the effect of the different pension laws of the two states on the age of death of the veteran, controlled for the year of birth and other covariates.

Equation (1) was also ran using the log(age) as the dependent variable for better model fit and increased ease of interpretation of the results. The new model has the following model specification:

$$Log\ (Age_{\ deathi}) = \theta_0 + \theta_1 ST_s + \theta_2 X_{cs} + \theta_3 Z_{cs} + \theta_4 U_i + \varepsilon_{if} \qquad (2)$$

In equation (2), $\log(Age_i)$ is the natural log of age of death of veteran i given that he is alive in the year 1916. ST_i is defined as the indicator for whether the veteran is from Texas or Oklahoma, and *X* is a vector of county demographic characteristics and Z is a vector of county economic characteristics.

A logit model was also used as alternate specification. The logit model took the following form:

$$P(\text{Veteran is from Texas})_{itc} = f(\theta_0 + \theta_1 Age_i + \theta_2 X_{cs} + \theta_3 Z_{cs} + \theta_4 U_i + \varepsilon_{if}) \quad (3)$$

where the outcome is the probability of veteran from the state of Texas for the veteran *i* born in year *t* living in county c in state *s*. Age_i is the age of death of the veteran *i* and *X* is a vector of county population characteristics and Z is a vector of county economic characteristics.

Finally, to evaluate the semi-elasticity of pension income on longevity, I estimated a proportional hazard (Cox) regression model. This enabled me to obtain the hazard rate arising from the difference in pension income. I model age of death against the dummy variable, the veteran's state, as the single covariate in the model. The model takes the following specification:

$$\lambda_x(t) = e^{\beta x}\lambda_0(t) \quad (4)$$

where $\lambda_1(t)$ is the hazard function over time for a subject with a covariate value of x=1 and $\lambda_0(t)$ is the hazard function for a subject with covariate value of x = 0. Letting x be a treatment indicator where x = 0 for control (Oklahoma pension law) and x = 1 for treatment (or Texas pension law), the model takes the following form:

$$\lambda_1(t) = e^{\beta x}\lambda_0(t) \quad (5)$$

$$e^{\beta} = \lambda_1(t) / \lambda_0(t) = \text{hazard ratio}$$

Results

The entire dataset included 339 veterans, 198 from Oklahoma and 141 from Texas. The death dates for the entire database ranged from 1916 to 1939. The birth year ranged from 1828 to 1873. The mean birth year for both Texas and Oklahoma veterans is 1842. The mean death year for both Texas and Oklahoma veterans is 1927.The mean age of death of veterans from Texas is 84.98 ± 6.25 years and from Oklahoma is 83.44 ± 6.20 years.

Table 1 - Number of Records from Oklahoma and Texas

State	Number	Percent	Cumulative Percent
Oklahoma	192	57.66	57.66
Texas	141	42.34	100
Total	333	100.00	

Table 1 above shows that there were in total 333 observations with 192 observations for Oklahoma and 141 for Texas. Table 2 shows the mean years of death and birth for both groups.

Table 2 - Oklahoma: Year of Birth and Death

Oklahoma	Observations	Mean	Std.Dev	Min	Max
Birth Year	198	1842	5.2616	1828	1873
Death Year	198	1926	5.9829	1916	1943
Texas	**Observations**	**Mean**	**Std.Dev**	**Min**	**Max**
Birth Year	141	1842	4.6217	1829	1849
Death Year	141	1927	5.4623	1916	1939

Table 3 below describes the county level variables used as controls for this study. County-level controls included value of livestock, county population, expenses for labour and percentage of children aged 10-14 years enrolled in school in the county. The value of livestock and labour expenses provided indication of the level of economic activity in the county whereas school enrollment provided an indication of the social mobility and infrastructure available in the county. The covariates included the main categories of county-level data that were available for 1910.

Table 3: Summary Statistics - Oklahoma and Texas County Level Data

Oklahoma	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
Labour Expenses ($)	192	56629	29427.71	15740	238860
Value Livestock ($)	192	1733093	1391653	943206	6900000
Population	192	25824	14316.16	12861	85232
School (%)	192	11.03	1.0209	7.5	12.48
Texas					
Labour Expenses ($)	141	80320	80105.96	3070	353640
Value Livestock ($)	141	1220962	572448.4	191185	2600000
Population	141	28336	21468.6	1569	135748
School (%)	141	10.51	0.8875	7.6	12.14

The results of the base OLS model is shown in Table 4 (Model I).The results show a difference in age of death between veterans in Texas and Oklahoma of 1.27 years ($p \leq 0.10$). Texan veterans who had higher pension income over a longer period of time gained an additional 15.2 months or 1.27 years of life compared to their Oklahoma peers. Controlling for just the year of birth, veterans in Texas have a statistically significant increase of 1.19 years ($p \leq 0.10$) of life compared to veterans in Oklahoma (Model II, Table 4). Controlling for the year of birth is important as many diseases degenerate with age and the results show statistically significant finding even after taking into account the natural progression of disease over time.

Table 4: Ordinary-Least Square Regression

	Model (I)	Model (II)	Model (III)	Model (IV)	Model (V)	Model (VI)
Dependent Variable:			**Age**			
State	1.2671*	1.1958*	1.1284*	1.1625*	1.2838**	1.3252**
	(0.6767)	(0.6102)	(0.6322)	(0.6324)	(0.6401)	(0.6605)
Birth Year		-0.5761***	-0.5768***	-0.585***	-0.590***	-0.5898***
		(0.0655)	(0.0656)	(0.06607)	(0.0661)	(0.0662)
School			-0.1298	0.0489	-0.0780	-0.0906
			(0.3132)	(0.3467)	(0.3624)	(0.3640)
Population				0.0000	0.0001	2.00E-05
				0.0000	0.0000	2.00E-05
Value-Livestock					3.41E-07	3.67E-07
					2.87E-07	2.96E-07
Labour Expenses						-2.93E-06
						6.79E-06
Constant	83.7187	1145.05	1147.80	1162.02	1171.88	1170.32
	0.4403	120.79	121.12	121.62	121.82	122.02
Observations	333	333	333	333	333	333
Adjusted R-Squared	0.0075	0.1932	0.1912	0.1923	0.1933	0.1913

*10% level of significance;** 5% level of significance; *** 1% level of significance

When the additional county-level demographic and socio-economic factors were taken into consideration, notably county population, literary rate of the country, amount of expenses spent on labour and the value of the livestock in the country, veterans in Texas have a statistically significant 1.32 ($p \leq 0.05$) additional years in life compared to veterans in Oklahoma (Model VI,

Table 4). The result shows the significant impact of the increase in pension income on the additional years of live gained for older-age veterans even after controlling for demographic and economic differences between the two states. The year of birth remained statistically significant covariate at 1% level of significance for all models reinforcing the need of controlling for unobservable characteristics pertaining to the progression of illness due to age and the type of deployments that may be tied to age and level of fitness.

The results of the log-linear model with the year of birth as a single covariate showed that veterans in Texas has an increase of 0.014 log years ($p \leq 0.10$) compared to Oklahoma veterans (Table 5, Model I). Veterans from Texas had a 1.4% increase in years of life compared to Oklahoma veterans. When all county-level covariates were included, the results show a statistically significant increase of 1.6% increase in years ($p \leq 0.05$) for the Texas veterans (Model VI). In all these specification variants and models that includes covariates, Texas veterans were shown to live longer than Oklahoma veterans (at the 5% level of significance).

Table 5: Ordinary-Least Square Regression (Log of Age) Results

	Model (I)	Model (II)	Model (III)	Model (IV)	Model (V)	Model (VI)
Dependant Variable:			**Log (Age)**			
State	0.014896*	0.01406*	0.01332*	0.01374*	0.01516**	0.01604**
	(0.0079)	(0.0072)	(0.0074)	(0.0074)	(0.0075)	(0.0078)
Birth Year		-0.0067***	-0.0067***	-0.0068**	-0.0068***	-0.0068***
		(0.0007)	(0.007)	(0.007)	(0.0007)	(0.0007)
School			-0.0014	0.0007	-0.0007	-0.0008
			(0.0037)	(0.0041)	(0.0042)	(0.0042)
Population				0.0000	0.0000	2.83E-07
				0.0000	0.0000	2.66E-07
Value-Lifestock					3.39E-09	4.43E-09
					3.36E-09	3.50E-09
Labour Expenses						-3.74E-08
						8.02E-08
Constant	4.4249	16.7859	16.8161	16.992	17.1075	17.0876
	0.0079	1.4269	1.4309	1.4365	1.4389	1.4412
Observations	333	333	333	333	333	333
Adjusted R-Squared	0.0074	0.1889	0.1868	0.1882	0.1892	0.1873

*10% level of significance;** 5% level of significance; *** 1% level of significance

Table 6: Logit Regression Results

	Model (I)	Model (II)	Model (III)	Model (IV)	Model (V)	Model (VI)
Dependant Variable:				**State**		
Age	0.0340**	0.0396**	0.0373*	0.0384*	0.0438**	0.0516***
	(0.0182)	(0.0203)	(0.0210)	(0.0211)	(0.0217)	(0.02267)
Birth Year		0.0170	0.0127	0.0158	0.0243	0.0094
		(0.0269)	(0.0279)	(0.0282)	(0.0288)	(0.02858)
School			-0.5543***	-0.5980***	-0.4643***	-0.4026***
			(0.1269)	(0.1363)	(0.1433)	(0.1487)
Population				-6.54E-06	9.64E-07	0.00002***
				7.48E-06	7.89E-06	9.36E-06
Value-Livestock					-5.79E-07	-1.30E-06
					1.95E-07	3.17E-06
Labour Expenses						1.75E-05
						3.64E-06
Constant	-3.177	-35.144	-20.947	-26.039	-42.988	-48.8789
	1.548	50.354	52.364	52.729	54.053	56.715
Observations	333	333	333	333	333	333
Pseudo R-Squared	0.0077	0.0086	0.0569	0.0585	0.088	0.1565

*10% level of significance;** 5% level of significance; *** 1% level of significance

The final regression conducted was the logit model (Table 6) to obtain the odds ratio. In the base model which controlled for just the year of birth, for every one unit increase in age, the odds ratio of a veteran coming from Texas was statistically significant at 1.03 ($p \leq 0.05$). When the

model included birth year and all the county-level controls, the odds ratio increased to 1.05 ($p \leq 0.001$), all results being statistically significant.

To detect for possible specification error, the linktest was run based on the assumption that if a model was properly specified, it would be unlikely to find additional predictors that are statistically significant except by chance (Stata). The test verified that the models were correctly specified.

Discussion and Conclusion

The results show that Texan veterans live longer than Oklahoma veterans when controlled for all county-level differences and year of birth (5% level of significance). Given the age of these veterans, their health conditions including disability sustained during the war or their indigent state and the time period, the increase in longevity due to the receipt of pension income is considerably large and impactful.

The Grossman model specifies that the demand for health care be derived from a rational demand for health and that the individual not only consumes but also produces health. The adapted model by Ehrlich & Chuma predicted that optimal health and longevity are increasing functions of endowed wealth and opportunities to produce health can increase the difference between endowed health and longevity. It predicted that importance of initial endowments in the determination of longevity regardless of current utility since extension of life itself will contribute to an individual's lifetime utility. It also predicted that individuals with higher endowed wealth favour a higher compensating premium for undertaking activities that can be damaging to their health. These predictions for the adapted model has important implications to the interpretation of the study results. The granting of the pension income represent a source of wealth for the veteran – a windfall that contributes to the veteran's initial endowment of wealth. The guaranteed income flow till end of life represent a steady flow of cash that causes the veteran to value health in order to maximize the remaining length of life. The effect of pensions provided to one group much earlier (Texas) enabled them to engage in activities that protect or

improve their health status to extend life. The outcome is manifested in the significant incremental difference of years of living gained compared to their Oklahoma peers.
By observing this empirical variations in wealth and time of death between these two groups, the findings provides robust evidentiary proof on the role of pension income on longevity. Though there were two dimensions to the study-amount of pension income and the year of enactment of the pension law, the results show the combined effect of both increased pension income and earlier access to a pension income program.

By observing these empirical variations in wealth and time of death between these two groups, the findings provides robust evidentiary proof on the role of pension income on longevity. Though there were two dimensions to the study-amount of pension income and the year of enactment of the pension law, the results show the combined effect of both increased pension income and earlier access to a pension income program. Pension income can impact health and mortality rates through several mechanisms. It can change living arrangements or increase the likelihood of retirement (Costa 1995; Costa 1997). In this case, it can enable veterans to transition out of their indigent state and increase the intake of calories which could lead to increased body-mass index. Fogel (2004) showed this relationship between body-mass index and mortality based on historical record spanning several generations. Access to increased pension income also enables the increase of quality food that can result in better health (Eli 2014).

The use of pension income enabled the control for reverse causality between health and income. Pension income, unlike wage income, is not affected by changes in health of the individual. An individual that is unable to work due to health can directly impact his wage income levels. In addition, by taking advantage of a natural experiment in history, set in a unique time-period when pension laws were starting to be enacted state by state in the Southern states to provide pension income to Confederate veterans. The difference in pension laws resulting in difference in pension amounts in two adjacent states represent the exogenous variation in income that addresses the issue of reverse causality between health and income. Hence, I was able to show the effect of receiving a higher pension at an earlier stage of life. Veterans that received a higher pension earlier by sixteen years were able to significantly delay mortality by as much as 1.3 years when controlled for all covariates. For every $10 increase in pension income, the number of years lived increased by 0.87% when controlled for year of birth. It increased to 1.61% when

controlled for all county-level differences including year of birth. This is based on the average of pension income received by Texas confederate veterans over the timespan of the study. The average difference of $70 in pension income per month resulted in a decrease of mortality hazard by 6.11% when controlled for year of birth and a mortality hazard reduction of 11.2% when controlled for year of birth and all other covariates.

There are several limitations of this study. Firstly, identification threats were identified earlier that may cause challenges for in the findings to be generalizable to the general population. The findings applicability to those of younger ages or to those who are less 'hardy' in health at older ages is a major limitation. Further, the two states were granted statehood at vastly different time. Though county-level controls were included in the analysis for different states of economy and demography, there may be other indirect and unquantifiable benefits that could have affected the veterans' decisions to improve their health. Secondly, measurement error is another limitation. Primary data collection for some key variables on death and birth years from pension application file records and indexes for both states were handwritten and transcription errors could have occurred in the interpretation of the handwriting. Third, county-level information was limited for Oklahoma. As such, adjacent county information was used instead as a proxy. Fourth, the validity and accuracy of some of the source data remains. This especially related to the death dates of Texas veterans as for some of these data, I resorted to graveyard data that was collected independently by individuals. Given that the time period is late 19th century and early 20th century and these Southern states did not have a common repository of data for pensions and demographics unlike the Union States pension program, some of the data limitations are unavoidable in this context. To the extent possible, as much data as possible was collected from archive information that was collected and verified by genealogists. Another main limitation is the possible presence of endogeneity. Though veterans from both States are similar in many aspects, there still remains inherent differences between these veterans. In Oklahoma, there are more Natives than Texas or Oklahoma veterans could have been influence by Natives since Oklahoma was created from Indian territories[6]. Using ICPSR county-level data[7], it was found that in 1910, the percentage of Native Americans in Oklahoma was 4% compared to 0.01% in Texas. Oklahoma has a higher population of Natives (pop=75,012) compared to Texas

(pop=1.645). Demographic differences detected between the two states include: Blacks constituted 8% in Oklahoma compared to 27% in Texas; Mexican-Americans represented 4.8% in Texas compared to 0.15% in Oklahoma. However, the percentages remain low for both states and it is not known how many of the Natives made up the sample population.

The disability status of veterans from Texas and Oklahoma could be considered as similar. This in due to the established conditions set in place in the legislations regarding eligibility criteria for pensions. In both states, this includes residency requirements, minimum months of service in the Confederate states military, age, injury sustained as a result of direct service (if age requirements are not met) and being in a state of indigent. In Oklahoma, the pension application process include a certificate from the physician attesting to the disability of the veteran and the inability to do manual work for a living (Figure 3). In Texas, a similar affidavit from the physician was also required attesting to the reasons behind the inability of the veteran to conduct any form of manual labour to support himself. This ensures that the physician has met and assessed the veteran from both states individually to ascertain disability status. However, without actual medical health records of each veteran, there remains a possibility that the baseline disability status between these two groups of veterans could be different.

There have been several reasons put forward as to the mechanisms by which income can effect health and mortality. Aizer (2015) analyzed the long-run effects of cash transfer to poor families using data from the Mothers' Pension program which was the first welfare program set up by the government that ran between 1911 and 1935. It showed that male children of accepted applicants lived as much as a year longer than mothers that did not receive the income. Aizer showed that the mechanism effecting longevity occurred mainly through anthropometric (the probability of being underweight reduced by half), educational attainment (increased by 0.4 years) and increased adult income at later stage (adult income of recipients' increased by 14% between ages 20-45 years). Unlike Union Army pension data, the evolution of Confederate pension system resulted in each state holding the repository of data within the state with no robust linkages to the educational attainment, weight and height information or lifetime earnings especially for Oklahoma veterans (as it only became a state in 1907). Surgeon's detailed health report of the veterans were also not available to compare the anthropometric measures between veterans who received pensions and those who were rejected pensions. As such, it can only be hypothesized

that with increased pension income that constituted stable, lifetime non-wage earnings, those with increased pension were able to make longer-term decisions to procure more stable or better housing, increase their caloric intake and their intake of better quality food, avoid returning to any form of manual labour to supplement income and to make other household and personal decisions that lead to better health that leads to longer lives. Pension income had been shown to impact longevity through changes in living arrangements or increase the likelihood of retirement (Costa, 1995; Costa, 1997). It enabled veterans to move out of their indigent state and increased their intake of calories which could increase their body-mass index. Fogel (2004) showed the relationship between body-mass index and mortality based on historical records of Union Army veterans. Though comparative data for Confederate veterans for the two states are lacking, it can by hypothesized that similar mechanisms are in effect for these veterans too.

Using Erhlich's adaptation of the Grossman model of health capital, it predicted the importance of initial endowments in the determination of longevity regardless of current utility since extension of life itself will contribute to an individual's lifetime utility. It also predicted that individuals with higher endowed wealth favour a higher compensating premium for undertaking activities that can be damaging to their health. These predictions from the adapted model has important implications to the interpretation of the study results. The granting of the pension income represent a source of wealth for the veteran – a windfall that contributes to the veteran's initial endowment of wealth. The guaranteed income flow till end of life represent a steady flow of cash that causes the veteran to value health in order to maximize the remaining length of life. The effect of pensions provided to one group much earlier (Texas) enabled them to engage in activities that protect or improve their health status to extend life.

Do these findings have relevance for our current times? This study support the very large income effects in the early 20th century, a finding that is aligned with results of increased pension income on Union Army veterans (Eli, 2014) and the effect of old-age Assistance program for the elderly in the 1930s (Balan-Cohen).The latter study showed declines in risk behavior and infectious diseases after the introduction of the income support program resulting in lower mortality. However, the income effects seem to decrease in later years. In the 1970s, legislation was introduced that resulted in much lower benefits to those born between January 1917 to 1921 commonly referred to as the Social Security Notch cohort. Snyder (2006) found that those

receiving the higher income had a statistically significantly higher mortality rate which alluded to decreasing income effects. In addition, it was found that those receiving the lower benefits compensated by increasing work effort post-retirement which could reflect the beneficial health effects of some form of employment. Engelhardt (2005) further found that lower benefits significantly change the living arrangements with negative elasticities of living with others.

In the US, 92% of the population aged 65 years and above received some form of Social Security pension benefits including lifetime pension income. In 2004, benefit payments totaled US$487 billion or approximately a quarter of the federal budget. For many retired Americans, government old-age pension represents a primary source of income. It enables older Americans to avoid poverty by providing guaranteed minimum level of monthly pension income. Since the 1930's, life-expectancy has steadily increased in the US as social security benefits have become more generous. In the 1940s, 53% of males aged 21 years were expected to live to age 65. This increased to 72% in the 1990s. There is much debate right now as to how the government should handle the underfunded obligations of US Social Security — proposals brought forth have ranged from reducing future benefits to moving to a defined contribution plan. Reducing pension income — or even completely moving away from a pension income plan — may have a detrimental impact on health of future retirees. Earlier access to pension income is an important factor in increasing longevity; therefore, the costs of policies aimed at efforts to alter pension income must be balanced with population health needs. Solutions must be found that move away from reducing benefits, and toward other forms of approaching the underfunding issue at hand. This may include increasing contribution rates or delaying mandatory retirement age. The results of this empirical study, therefore, may provide evidence to policy-makers that the use of cash transfers in the form of pension income is an effective health intervention tool to reduce mortality rates; this is a policy rationale that has also been brought forward by other economists (Case, 2000; Arno, 2011). Finally, these findings have implications toward the development and delivery of cash transfer programs (in the form of pension income) in developing countries. Many of these countries either have a rudimentary pension system in place or no government pension program at all available for the elderly. It can be argued that there are parallels between the conditions in early 20th century US and those faced by some of the least developing countries (LDCs) today, such as state of the economy and level of public infrastructure. Hence, the findings from this research can be used as rationale for incorporating a universal pension income

system in these countries. The provisions of pension income should be treated as a form of public health intervention program. In the process, they will provide the stimulus for economic growth in poorer counties and enable the poorest to escape the cycle of poverty.

Notes

I would like to thank Shari Eli (University of Toronto), Laura Salisbury (York University), Joanna Short (Augustana College) for their comments on earlier versions of this article and Isaac Ehrlich on the economic framework. I am also thankful to Dora Costa (UCLA) for valuable comments that has enabled me to refine and improve on this paper. I further wish to thank Carol Guilliams from Oklahoma Digital Prairie, Andrea Prouse and staff from the Texas State Library and Archive Commission Oklahoma Archives and the Confederate Graves Registry who provided access and advice on the use of their data. I am grateful for all of these contributions.

[1] Historical Statistics of the United States for 1901-82 (1850 data for Massachusetts only)

[2] The comprehensive index was authored by Larry Dobbs and edited by Tina Colloway of the Oklahomo Department of Libraries.

[3] The Confederate Graves Registry (http://cgr.scv.org) was set up by the Sons of the Confederate Veterans to set up a searchable database of all Confederate gravesites.

[4] "The Indian Removal Act was signed into law by Andrew Jackson on May 28, 1830, authorizing the president to grant unsettled lands west of the Mississippi in exchange for Indian lands within existing state borders. A few tribes went peacefully, but many resisted the relocation policy. During the fall and winter of 1838 and 1839, the Cherokees were forcibly moved west by the United States government. Approximately 4,000 Cherokees died on this forced march, which became known as the "Trail of Tears." (Source: Library of Congress).

[5] Oklahoma is home to nearly 40 Native American tribes. The Indian Removal Act of 1830 force all Eastern Indians west of the Mississippi River. "The Choctaws, Cherokees, Creeks, Chickasaws and Seminoles--the "Five Civilized Tribes"-- purchased present Oklahoma in fee from the federal government, while other immigrant tribes were resettled on reservations in the unorganized territories of Kansas and Nebraska. Passage of the Kansas-Nebraska Act in 1854 precipitated further Anglo-American settlement of these territories, setting off a second wave of removals into present Oklahoma, which became known as "Indian Territory." In 1859, several tribes found refuge in the Leased District in western Indian Territory. The Civil War (1861-1865) temporarily curtailed frontier settlement and removals, but postwar railroad building across the Great Plains renewed Anglo-American homesteading of Kansas and Nebraska. To protect the newcomers and provide safe passage to the developing

West, the federal government in 1867 once again removed the Eastern immigrant Indians form Kansas and Nebraska reservations and relocated them on Indian Territory lands recently ceded by the Five Civilized Tribes. The same year, the Medicine Lodge Council attempted to gather the Plains tribes onto western Indian Territory reservations. Resistance among some resulted in periodic warfare until 1874. Meanwhile, the last of the Kansas and Nebraska tribes were resettled peacefully in present Oklahoma." (Source: The American Indian Cultural Center and Museum, Oklahoma). Note also that the Civil War most distinct battle took place in Honey Springs where the vast majority were Indians from the Five Civilized Tribes who in all purposes with were well-integrated with the whites before they were forced to sign land-cessation treaties.

References

Aizer, A., Eli, S., Ferrie, J., & Lleras-Muney, A. (2016). The Long-Run Impact of Cash Transfers to Poor Families. *The American Economic Review*, 106(4), 935-971.

Arno, P. S., House, J. S., Viola, D., & Schechter, C. (2011). Social security and mortality: The role of income support policies and population health in the United States. *Journal of Public Health Policy, 32*(2), 234-50.

Balan-Cohen, A. (2007). Healthy, Wealthy, and Wise? The Impact of the Old Age Assistance Program on Elderly Mortality in the United States. (December 2007).

Confederate pension applications, Texas Comptroller's Office claims records. Archives and Information Services Division, Texas State Library and Archives Commission.

Costa, D. L. (1995). Pensions and retirement: Evidence from union army veterans. *The Quarterly Journal of Economics*, 297-319.

Costa, D. L. (1997). The evolution of retirement. *NBER Reporter*.

Cutler, D., Deaton, A., & Lleras-Muney, A. (2006). The determinants of mortality. *Journal of Economic Perspectives, 20*(3), 97-120.

Eli, S. (2015). Income Effects on Health: Evidence from Union Army Pensions. *The Journal of Economic History*, 75(02), 448-478.

Eli, S., & Salisbury, L. (2015). Patronage Politics and the Development of the Welfare State: Confederate Pensions in the American South (No. w20829). *National Bureau of Economic Research*.

Ehrlich, I., & Chuma, H. (1990). A Model of the Demand for Longevity and the Value of Life Extension. *Journal of Political Economy, 98*(4), 761-82

Engelhardt, G. V., Gruber, J., & Perry, C. D. (2005). Social security and elderly living arrangements evidence from the social security notch. *Journal of Human Resources*, 40(2), 354-372.

Fogel, R. W. (1986). In Engerman S. L., Gallman R. E.,eds (Eds.), *Nutrition and the decline in mortality since 1700: Some preliminary findings* Studies in Income and Wealth series, vol. 51 Chicago and London: University of Chicago Press.

Fogel, R. W., & Costa, D. L. (1997). A theory of technophysio evolution, with some implications for forecasting population, health care costs, and pension costs. *Demography*, *34*(1), 49-66.

Fogel, R. W. (2004). Health, nutrition, and economic growth. *Economic Development and Cultural Change*, *52*(3), 643-658.

Green, E. C. (2006). Protecting Confederate Soldiers and Mothers: Pensions, Gender, and the Welfare State in the U.S. South, a Case Study from Florida. *Journal of Social History* 39(4), 1079-1104. Oxford University Press. Retrieved October 4, 2014, from Project MUSE database.

Grossman, M. (1999). *The human capital model of the demand for health* (No. w7078). National Bureau of Economic Research.

Gutmann, Myron P. Great Plains Population and Environment Data: Social and Demographic Data, 1870-2000 [United States]. ICPSR04296-v2. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2007-02-07. http://doi.org/10.3886/ICPSR04296.v2

Kirchenbauer, A (2011). The Texas Confederate Home for Men, 1884—1970, 01/2011, ISBN 1267313609

Oeppen J, Vaupel JW. Demography. Broken limits to life expectancy. Science. 2002 May 10;296(5570):1029-31.

Oklahoma Digital Archives, www.digitalprarie.ok

Salm, M. (2011). The effect of pensions on longevity: Evidence from union army veterans*. The Economic Journal, 121(552), 595-619.

Short, J (2006), Confederate Veteran Pensions, Occupation, and Men's Retirement in the New South, *Social Science History*, ISSN 0145-5532, 04/2006, Volume 30, Issue 1, pp. 75 - 10

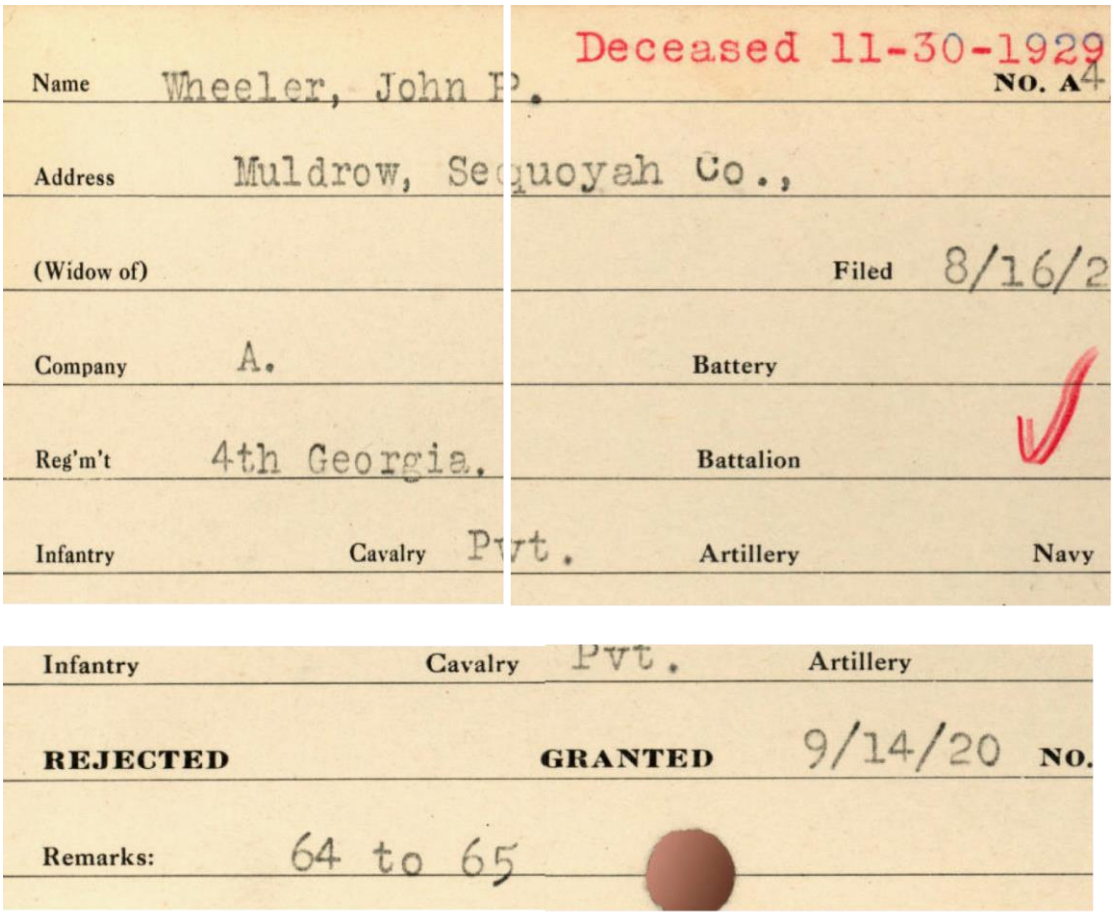
Snyder, S. E., & Evans, W. N. (2006). The effect of income on mortality: evidence from the social security notch. The Review of Economics and Statistics, 88(3), 482-495.

8 Appendix: Figures

Figure 1: Pension amounts in Texas

Fiscal Year	Annual Pension Amount	% Increase
1899-1900	$22.32	
1900-1901	$24.30	9%
1901-1902	$31.60	30%
1902-1903	$29.80	-6%
1903-1904	$37.00	24%
1904-1905	$36.00	-3%
1905-1906	$55.00	53%
1906-1907	$66.00	20%
1907-1908	$64.50	-2%
1908-1909	$61.00	-5%
1909-1910	$43.50	-29%
1910-1911	$42.00	-3%
1911-1912	$42.00	0%
1912-1913	$42.00	0%
1913-1914	$67.50	61%
1914-1915	$67.00	-1%
1915-1916	$53.50	-20%
1916-1917	$63.00	18%
1917-1918	$66.00	5%
1918-1919	$82.00	24%
1919-1920	$91.00	11%
1920-1921	$96.00	5%
1921-1922	$97.00	1%
1922-1923	$108.00	11%
1923-1924	$127.00	18%
1924-1925	$146.00	15%
1925-1926	$170.00	16%
1926-1927	$190.00	12%
1927-1928	$208.00	9%

Figure 2: Oklahoma Pension File Record Illustration



Name Wheeler, John P. Deceased 11-30-1929 NO. A4

Address Muldrow, Sequoyah Co.,

(Widow of) Filed 8/16/2

Company A. Battery

Reg'm't 4th Georgia. Battalion

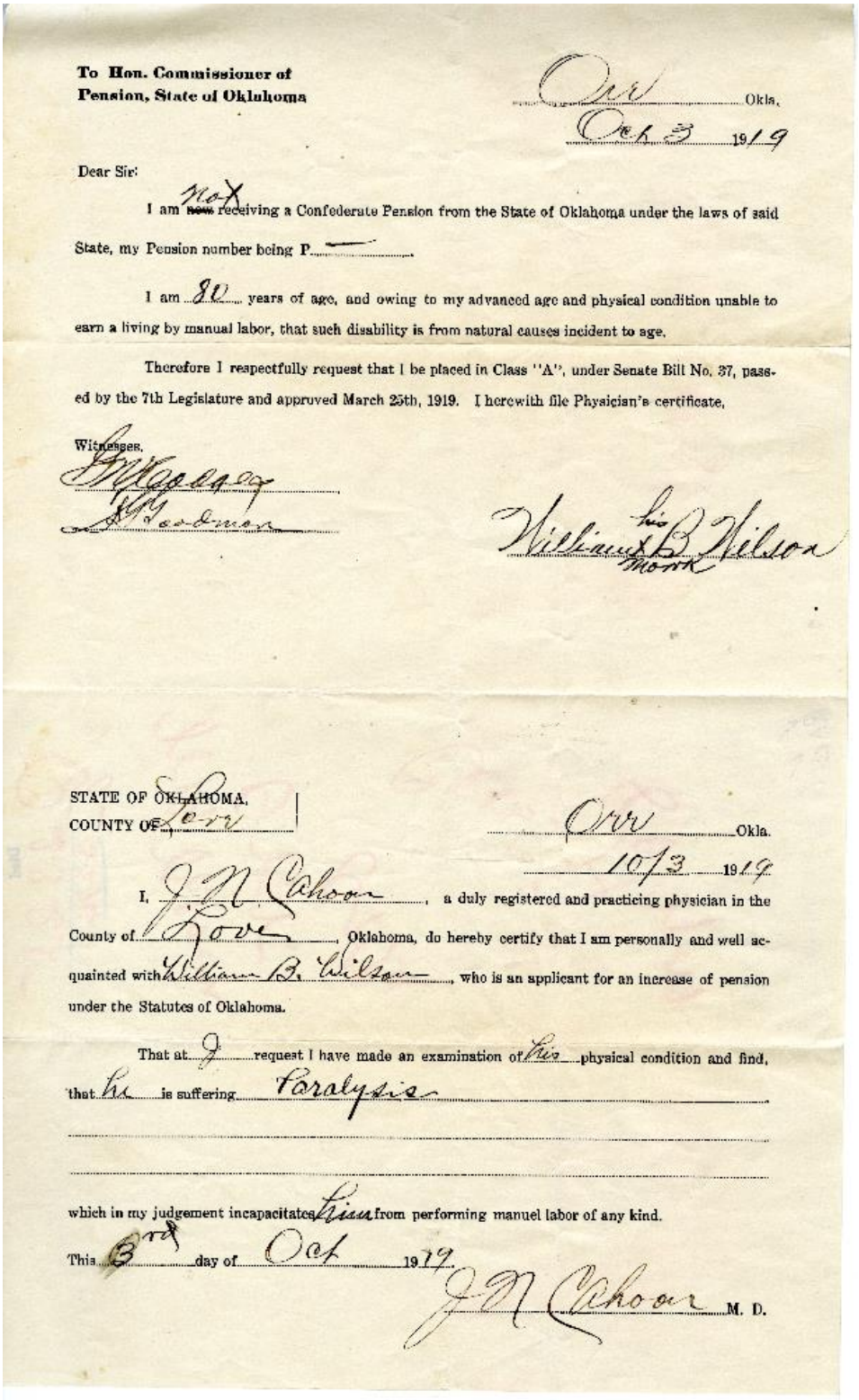
Infantry Cavalry Pvt. Artillery Navy

Infantry Cavalry Pvt. Artillery

REJECTED GRANTED 9/14/20 NO.

Remarks: 64 to 65

Figure 3: Oklahoma Pension Application Illustration



To Hon. Commissioner of
Pension, State of Oklahoma

Ove Okla.
Oct 3 1919

Dear Sir:

I am ~~now~~ not receiving a Confederate Pension from the State of Oklahoma under the laws of said State, my Pension number being P. —.

I am 80 years of age, and owing to my advanced age and physical condition unable to earn a living by manual labor, that such disability is from natural causes incident to age.

Therefore I respectfully request that I be placed in Class "A", under Senate Bill No. 37, passed by the 7th Legislature and approved March 25th, 1919. I herewith file Physician's certificate,

Witnesses.
W Hagaman
W Goodman

William B Wilson
mark

STATE OF OKLAHOMA,
COUNTY OF Love

Ove Okla.
10/3 1919

I, J N Cahoon, a duly registered and practicing physician in the County of Love, Oklahoma, do hereby certify that I am personally and well acquainted with William B. Wilson, who is an applicant for an increase of pension under the Statutes of Oklahoma.

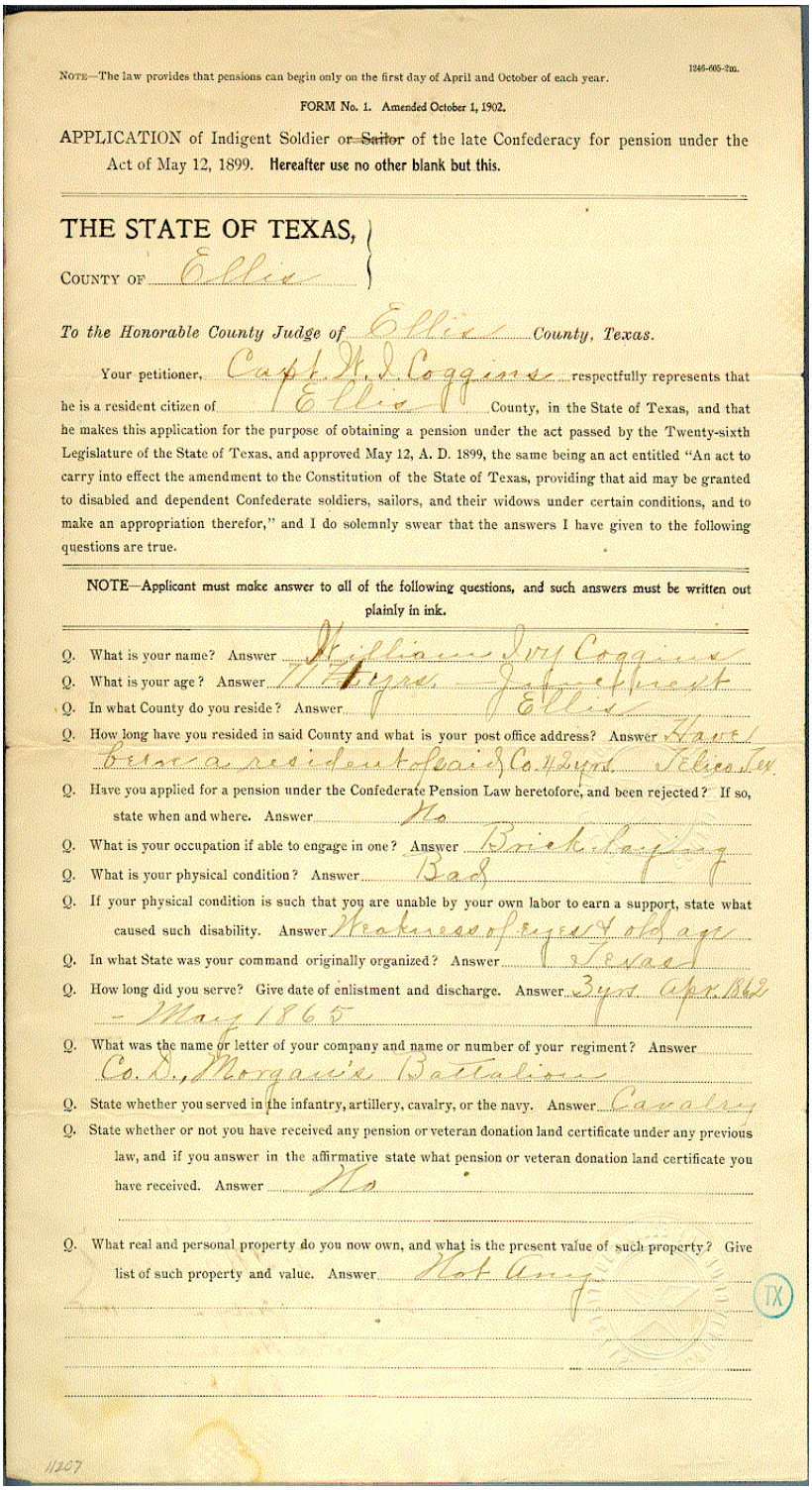
That at his request I have made an examination of his physical condition and find, that he is suffering Paralysis

which in my judgement incapacitates him from performing manuel labor of any kind.

This 3rd day of Oct 1919.

J N Cahoon M. D.

Figure 4: Texas Pension Application Illustration



NOTE—The law provides that pensions can begin only on the first day of April and October of each year. 1246-005-2m.

FORM No. 1. Amended October 1, 1902.

APPLICATION of Indigent Soldier or ~~Sailor~~ of the late Confederacy for pension under the Act of May 12, 1899. **Hereafter use no other blank but this.**

THE STATE OF TEXAS,
COUNTY OF Ellis

To the Honorable County Judge of Ellis *County, Texas.*

Your petitioner, Capt. W. J. Coggins respectfully represents that he is a resident citizen of Ellis County, in the State of Texas, and that he makes this application for the purpose of obtaining a pension under the act passed by the Twenty-sixth Legislature of the State of Texas, and approved May 12, A. D. 1899, the same being an act entitled "An act to carry into effect the amendment to the Constitution of the State of Texas, providing that aid may be granted to disabled and dependent Confederate soldiers, sailors, and their widows under certain conditions, and to make an appropriation therefor," and I do solemnly swear that the answers I have given to the following questions are true.

NOTE—Applicant must make answer to all of the following questions, and such answers must be written out plainly in ink.

Q. What is your name? Answer William Ivy Coggins
Q. What is your age? Answer 77 Yrs. 7 months
Q. In what County do you reside? Answer Ellis
Q. How long have you resided in said County and what is your post office address? Answer Have been a resident of said Co. 42 yrs. Telico, Tex.
Q. Have you applied for a pension under the Confederate Pension Law heretofore, and been rejected? If so, state when and where. Answer No
Q. What is your occupation if able to engage in one? Answer Brick laying
Q. What is your physical condition? Answer Bad
Q. If your physical condition is such that you are unable by your own labor to earn a support, state what caused such disability. Answer Weakness of eyes & old age
Q. In what State was your command originally organized? Answer Texas
Q. How long did you serve? Give date of enlistment and discharge. Answer 3 yrs Apr 1862 - May 1865
Q. What was the name or letter of your company and name or number of your regiment? Answer Co. D, Morgan's Battalion
Q. State whether you served in the infantry, artillery, cavalry, or the navy. Answer Cavalry
Q. State whether or not you have received any pension or veteran donation land certificate under any previous law, and if you answer in the affirmative state what pension or veteran donation land certificate you have received. Answer No
Q. What real and personal property do you now own, and what is the present value of such property? Give list of such property and value. Answer Not any

11207

Q. What property, and what was the value thereof, have you sold or conveyed within two years prior to the date of this application? Answer Not Any

Q. What estate has your wife in her own right, real and personal, and what is its value? Answer Dead Not Any.

Q. What income, if any, do you receive? Answer None

Q. Are you in indigent circumstances; that is, are you in actual want, and destitute of property and means of subsistence? Answer Yes

Q. Are you unable by your labor to earn a support? Answer Yes

Q. Have you transferred to others any property of value of any kind for the purpose of becoming a beneficiary under this law? Answer No

Q. Did you ever desert the Confederacy? Answer No

Q. Have you been continuously since the first day of January, 1880, a bona fide resident citizen of this State? Answer Yes

Q. If you originally enlisted in the Confederate service from the State of Texas, were you at the date of the passage of this act a bona fide resident citizen of the State of Texas? Answer Yes

Wherefore your petitioner prays that his application for pension be approved and that such other proceedings be had in the premises as required by law.

(Signature of Applicant) W. J. Coggins

Sworn to and subscribed before me this 26th day of May A. D. 1905

F. L. Hawkins

(SEAL)

County Judge Ellis County, Texas.

AFFIDAVIT OF WITNESSES.

(NOTE—There must be at least two credible witnesses.)

THE STATE OF TEXAS,

COUNTY OF Ellis

Before me F. L. Hawkins

County Judge of Ellis County, State of Texas, on this day personally appeared T. J. Mullican,

who are personally known to me to be credible citizens, who being by me duly sworn on oath, state that they personally know W. J. Coggins the above named applicant for a pension, and that they personally know that the said W. J. Coggins is unable to support himself by labor of any sort.

(Signature of Witness) T. J. Mullican

(Signature of Witness) W. L. Hancock

Sworn to and subscribed before me this 27th day of July A. D. 1905

(SEAL)

F. L. Hawkins

County Judge Ellis County, Texas.

PROOF OF SERVICE MUST NOT BE MADE A PART OF THIS AFFIDAVIT.