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The Effect of Pension Income on Longevity: Evidence from Confederate Veterans[1]

Abstract

This study uses differences in pension laws between two adjacent states to investigate the causal effect of pension income longevity. I examined Confederate pensions in Texas and Oklahoma, which enacted pension laws for veterans in 1889 and 1915 respectively. Using previously collected and newer data on Confederate veterans from these states, I use the adapted Grossman model to test the effect of pension income on mortality. 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. I found that veterans in Texas gained nearly 1.3 years (or 15 months) of additional years of life, as compared to veterans in Oklahoma. I also found that for every $10 increase in pension income, there was a 0.4% increase in years of additional life and 0.7% increase in years of life, if county-level controls are taken into consideration. The effect of an increase in pension income on longevity is large and significant.

JEL Classification: I12; J14; N41

Keywords: pensions, income, mortality, Grossman model, health gradient, confederate veterans

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1 Introduction

Mortality rates have shown a steady decrease since 1830s, continuing through the Industrial Revolution (Oeppen, 2002) - this period corresponded with an acceleration of scientific and technological advancements, as well as population growth and increased life expectancy. In fact, life-expectancy at birth in the U.S. increased from fifty-six years in 1800 to sixty-eight years in 1950[2]. Much of the literature on the topic of U.S. mortality rates emphasizes the impact of factors such as living arrangements, city size, early-life health, medical advances and public health initiatives, such as vaccinations[3] and information on personal hygiene.

How does income fit into this analysis of longevity? An examination of the pension laws of 1907 and 1912 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 examine in this paper how income affects longevity in the late 19th and early 20th century. Using evidence from pensions for Confederate veterans of the Civil War, I investigate the impact of differences in pension income levels on longevity by comparing Confederate veterans from Texas to those from Oklahoma. 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,

[2]As shown by Fogel (2004), "The increase in the world's population between 1900 and 1990 was four times that of the increase from the recorded history of humankind."

[3]The first use of antitoxin for diphtheria in the US started in 1894. First compulsory vaccination of smallpox started in 1805. Early polio vaccine trials started in 1935. First measles vaccine tested in 1958. Vaccine for yellow fever discovered in 1936. Vaccine for cholera discovered in 1885. Typhoid vaccination established in 1896. Cholera vaccine developed in 1911. First human trials of BCG for tuberculosis conduced in 1921. Whooping cough vaccine shown to be effective in 1939. (Source: College of Physicians of Philadelphia).

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, enabling 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, making it quite challenging to extract these records and link them to birth and death dates of the veterans. As a result, the availability of an accurate, comprehensive source for health and pension income data is lacking for Confederate veterans[4].

Using previously collected and newer data on Confederate veterans from Oklahoma and Texas, I use an adapted Grossman model to test the effect of pensions on mortality. 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. I found that veterans in Texas gained nearly 1.4 years (or 16 months) 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, there was a 0.8% increase in years of additional life and 1.0% increase in years of life if county-level controls are taken into consideration[5].

Due to the difference of pension laws between these two States (both in terms of timing and levels

[4] All Union army pension, medical and census records are available from the Center for Population Economics.

[5] In this process, I was able to create a consolidated database that has both birth and death dates of a cohort of veterans from the two states derived from multiples source The database combines birth and death dates data from multiple source including ancestry.com, pension applications and cemetery records. A list of Texas veteran names and application numbers is available from Laura Salisbury (York University).

of pension income), I was able to investigate a cohort of Confederate veterans who received different levels of pension income over the time period of the study. This enabled me to overcome reverse causality issues between income and health. To isolate the effect of increased income on health, I use the exogenous change in pension income levels between Texas and Oklahoma, as a result of different pension laws between the two states. These veterans are otherwise similar because they faced similar exposure to wartime climate, infectious diseases and other environmental hazards. Further, Texas was the main supplier of soldiers in the Confederacy - they fought in nearly all the main battles in the South, including in Oklahoma. This reduces the unobserved differences in characteristics between the two veteran populations.

Finally, I use an OLS regression model 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 chapter is organized into the following sections. Section 2 provides the literature review of determinants of mortality during the late 19th and early 20th century. Section 3 provides the historical background of Confederate pension system and how it evolved after the end of the Civil War. It also expands on the theoretical framework used in this study. Section 4 describes the data and the collection methodology used to create the dataset. Section 5 provides the econometric framework. Section 6 contains the results. Section 7 concludes the chapter.

2 Literature Review

This section focuses on the literature review, which is comprised of two main sections: general historical and current factors contributing to longevity (section 2.1) and the role of income on longevity (section 2.2).

In Section 2.1, I summarize the factors contributing to the increase in life-expectancies including nutrition/food supply (section 2.1.1), environment (section 2.1.2), early-life health (section 2.1.3), medical discoveries (section 2.1.4), public health initiatives (section 2.1.5), technological advancements (section 2.1.6), anthropometric factors (section 2.1.7). Factors that contributed to increases in longevity post 20th century are addressed in the section 2.1.8. Factors such as income and chronic conditions cross all time-periods and are addressed in detail in this section.

In Section 2.2, I describe literature on the role of income in longevity. In Section 2.3, literature specifically on the role of pension income on veterans in the 20th century are summarized and reviewed.

2.1 Longevity Literature

The scoping literature review focuses on peer-reviewed academic articles in the economics field for the past ten years. The database, EconLit, was the prime source for the search. Other online databases include EconPapers and Google Scholar.

The literature in this area is wide-reaching, involving much cross-over with disciplines such as history, epidemiology, demography, sociology, and biology, and provides insight as to how socio-economic and biological factors impact mortality over time. The review targets all possible factors that could have an impact on mortality or longevity at any stages of life (either early-life, midlife and possibly late-life).

The main keywords used in the search were mortality reduction, focusing on the United States. Other additional keywords included twentieth century, nineteenth century, income, pension income, mortality reduction. In addition, references and citations of key articles were analyzed to ensure that the relevant papers were captured.

The inclusion criteria was (a) all the studies were conducted from 2005 to 2014 (b) studies were in English (c) studies contained information relevant to mortality reductions in the late 19th century and early 20th century United States. Also included were books authored by top-cited peer-reviewed articles that were relevant to the subject matter.

The exclusion criteria were those articles that did not meet any of the inclusion parameters. Other articles that were excluded were those focused outside the United States and those that were conducted in time periods that were outside the study time period.

The search yielded a total of 229 peer-reviewed articles and six published books. Each of the abstracts was reviewed for relevancy and 34 articles were selected for further detailed analysis. The articles were categorized into main areas of determinants of mortality in the late 19th and early 20th century.

The leading researcher in this area is Fogel (1998), who coined the term 'technophysio evolution' to describe the cumulative impact of advances in technology of production and human physiological progress (Fogel, 1997). This theory applied to the last 300 years of human history, and the twentieth century, in particular. Defying the prevailing understanding of human evolution (natural selection), Fogel postulates that until the late 19th century, the masses could be described as 'nasty, brutish and short,'; however, due to major technological advances of the last two centuries, human longevity increased. Along with improvements in water quality and healthcare came the onset of chronic disease and an increased elder population. Using longitudinal studies, Fogel (2004) analyzed chronic diseases throughout the twentieth century and found that the rate of age-specific chronic health conditions steadily declined. He also found significant delays in the onset of chronic health conditions over this same period. These findings led Fogel to surmise that the synergy between technology and physiology improvements reduced the disparity of life-expectancies between the rich and the poor.

In Cutler's 2006 paper 'The Determinants of Mortality', three phases were identified in the path of mortality reduction (for developed countries). The first phase dealt with improvements in nutrition and economic growth (spanning until the mid-19th century). McKeown (1976) also emphasized the importance of nutrition rather than public health in mortality reductions in this time period, though this idea was much debated. In the second phase, public health interventions played a crucial role in mortality reductions through major initiatives, such as clean water, improved sewer treatment facilities and public health campaigns. In the final phase, improvements in medical technology including vaccinations and personalized medicine become key factors in driving down mortality rates. Although there is no general consensus as to the definitive contributing factor to increased longevity, Cuter predicted that increasing medical advances would be a critical driver toward decreasing mortality rate, and that educational, race and social classes would continue to play an impactful role.

In total, 34 articles were found using EconLit that were directly related to the topic. The rest of the papers were relevant citations and references of these main papers. The results can be categorized into the following determinants of mortality - nutrition. Environment, early-life health, public health measures, Anthropometric measures, urban measures, infectious diseases, in utero, medical advances and income.

2.1.1 Nutrition

In his 1997 paper, 1Economic and Social Structure for an Aging Population,' Fogel draws several conclusions regarding the impact of increased longevity. These include the near elimination of chronic malnutrition and dietary deficiencies in wealthy countries, the predictive power of BMI on mortality, the importance of nutritional status in providing the link between technology advancements and physiological improvements, which subsequently contributed to economic growth. McKeown (1976) emphasized the role of nutrition in contributing towards increases in life-expectancy in the past two decades. Cutler and Lleras-Muney (2006) further noted the role of nutrition towards improved health.

Bacci-Livi (1991), a demographer, does not support this idea of correlation between nutrition/BMI and mortality, and noted that there is a lack of substantive data on historical prices, food budget and human height to support conclusive results in this area. Furthermore, studies comparing different social classes showed no correlation between type and level of nutrition and mortality rates. It was noted that humans have shown a great degree of adaptability to nutritional stress, which may mitigate the outcome on survival.

2.1.2 Environment

Causal relationships have been shown to be confounded with the presence of background environmental risks. Fogel and Costa (1997) investigated this in greater detail in their original 1997 paper, in which they argue that environmental factors have imparted physiological changes in human beings, thus leading to changes in morbidity rates. Reduced incidence of chronic diseases is considered a result of these changes, but other explanations are also being studied, including lifestyle choices and the increasing effectiveness of medical interventions. According to Fogel (2004), a systematic analysis of these questions will require an integrated study of mortality rates, morbidity rates, food intake and individual body weights and statures. Costa alluded to this when she mentions that exposure to dust and gases that occurred as the result of the Industrial revolution adversely affected those working in the mining and farming industries.

An alternate viewpoint was explored by Meeker (1972), in which he calculated death rates in four major US cities and found declines in deaths from infectious disease (e.g. scarlet fever, yellow fever, cholera, smallpox, etc.) between 1864 and 1923. However, this finding could be the result of wide heterogeneity in age, class and ethnicity. The mortality rate declines identified by Meeker could also be due to various other exogenous factors that were occurring at the same time such as large-scale public health interventions and infrastructure development (urban planning, citywide sanitation networks, milk pasteurization or meat inspection).

2.1.3 Early-life health

In her paper 'Understanding Mid-Life and Older Age Mortality Declines: Evidence from Union Army Veterans,' Costa finds that the occurrence of infectious disease earlier in life can have a long-term impact on mortality, for those that reached middle age around the 1900. The strongest effect on survival occurred among those that grew up in large cities. Costa found that the combined effect of reduced life and young adult infectious disease rates accounted for nearly 13% of the 21-percentage point increase in survival rates among males aged 6-64 years of age in the twentieth century. Reductions in mortality from infections and other acute diseases account for about 13% of the increase in survival rates.

2.1.4 Public Health Initiatives

In terms of the role of public health infrastructure, Troesken (2004) emphasizes the benefit of sanitation infrastructure in preventing typhoid fever during the Jim Crow era. The risk of disease spillovers across communities highlighted the cost of discrimination and ensured that developments in sanitation, such as centrally-supplied water and sewer systems, did not discriminate between blacks and whites.

Many researchers cite public health interventions as critical to the decline of mortality rates. Cutler and Miller (2005) investigate the causal link between clean water technologies (filtration and chlorination) and mortality in 20th century US. Using exogenous variables, they found that clean water access was responsible for close to half of the total mortality reductions in major cities. Similarly, Ferrie and Troesken also showed that up to 50% of the reduction in crude death rate in Chicago during this time period can be attributed to water purification measures alone. However, there are others such as McKeown (1962), an epidemiologist, who argue that broad economic and social changes, such as wealth and nutrition, are the primary reasons behind longevity, rather than targeted public health interventions and changes in medical technology. McKeown cites the fact that food supply grew faster than the population in 19th century England; as evidence of improved economic conditions. This, in turn, provided access to better nutrition, thereby improving resistance to disease. However, McKeown downplays the role of basic public health initiatives, such as vaccination in improving health and extending life-expectancy[6].

2.1.5 Anthropometric measures

Bengtsson (2011) undertook seven studies in the US, Canada and Europe; he finds that social differences were present both before and after the industrial revolution, implying that differences in mortality between the periods are not directly related to industrialization. Thus, any association between income and mortality that is observed in current times is likely a recent phenomenon. Zehetmayer (2011) explored whether the antebellum decline in height continued in the second half of the nineteenth century by analyzing US Army recruits born between 1847 and 1894. This study

[6]McKeown's findings created a huge amount of outcry and controversy especially since it was presented in the 1970s, a period where there was already ongoing debate on the focus and allocation of health resources in the UK. Though the jury over his findings is still inconclusive, McKeown's work help focus attention on the pivotal question, 'What are the most important determinants of society's pattern of longevity'

found that height continued to decline during the Civil War by 1.0 cm and remained steady for some time before increasing in the late 1880s. Zehetmayer also found that height was positively correlated with protein-rich diets during childhood and with geographic mobility, but was negatively correlated with urbanization and infant mortality rates.

Haines (2011) analyzed evidence of the US Colored Troops during the Civil War to see if the 'Antebellum Puzzle' also affect African Americans.[7] He found that African American recruits did show evidence of declining heights from the 1820s birth cohorts and onwards, however, the characteristics of their counties of birth did not explain fully the differences in heights.

Fogel (1986; 1997) also showed significant increases in human welfare and longevity occurred during periods of exponential increases in anthropometric measures. By measuring changes in height and BMI, he presented evidence of changes in human physiology, especially in the last three centuries, and the corresponding declines in mortality rate. Data from the UK and the US shows sharp drops in mortality over the last three decades, translating to a gain of nearly 16 years. Using hazard models, his colleague Costa showed that changes in frame size (waist-to-hip ratio), accounted for 47% of the total decline in all-cause mortality at older ages between the beginning and end of the 20th century.

2.1.6 Urbanization

Urbanization was another factor that has been shown to contribute towards mortality risk. As cities rapidly increased in size, overcrowding resulted in adverse living conditions as cities struggled to meet the needs of an exploding population. Epidemiological data from US and Europe shows high rates of infectious diseases in cities. Urban areas with populations of greater than 50,000 people

[7] The 'Antebellum Puzzle' refers to the fact that although the American economy was experiencing rapid economic growth in the years before the Civil War, the height of native-born white males had declined for the birth cohorts from the late 1820s.

have rates of death that are twice that of rural areas. Cain & Hong (2008) analyze US union army data, which quantifies this urban mortality penalty across all three life stages - early-life, young adult and later-life. They found a significant hierarchy of survival rates by urban size. Survival rates in the largest cities were the lowest compared to cities of smaller populations. Rural areas had the highest survival rates. Further, for reasons that are yet to be determined, this urban penalty is greatest in the adolescent/young adult stage of an individual.

Employing survival analysis to determine urban mortality rates is generally considered an accurate technique, but care must be exercised in the use of confounding variables. Cain & Hong postulated that rapid growth hindered cities from providing rudimentary sanitation and access to clean water. In addition, rural migrants came to cities with little natural immunity against infectious diseases, while new foreign immigrants introduced new diseases to the population. Disease spread rapidly amongst immigrants crowding into tenements. As such, it can be argued that the urban mortality penalty may not be as significant as proposed. Rather, exposure to infectious diseases could be the driver of mortality rates at all stages of life.

2.1.7 Infectious Disease

This leads to the discussion of the role of infectious diseases in early life upon late life mortality and morbidity. In one of his seminal papers, Fogel (1994) used longitudinal studies of Union Army veterans to support his hypothesis that the exposure to environmental hazards and infectious diseases early in life, including in utero, can impact the extent and severity of chronic conditions in middle and late life (Floud, 2010). Chronic conditions were not only more prevalent in the elderly in the early 20th century as compared to current times, but they also occurred much earlier in life. Case in point: the average age of onset of heart disease was 56 years in the late 1800s, as compared to 65 years in the early 1900s. Costa explored this in further detail and calculated that reduced exposure to infectious disease in early years accounted for 10% to 25% of the decline in chronic conditions later in life (Costa, 2000). However, the physiological pathway of early exposure to reduce risk of chronic disease is still left unexplained. Others such as Kiple and Khosla found a correlation between infectious disease exposures at later stages in life, especially youth, to chronic conditions such as heart diseases at older ages.

2.1.8 In Utero

Bakker brought a biological angle to this question in the 1994 paper, 'The Maternal and Fetal Origins of Cardiovascular Disease,' wherein he discovered a link between fetal developmental conditions and cardiovascular disease in adult life. Using detailed data from the UK, Bakker showed that many of the underlying causes of cardiovascular disease, including type 2 diabetes, are programmed in fetal life. The study has important implications for understanding longevity, though it is not without criticisms. Lifestyle conditions, for example, are not taken into account - individuals with developmental weaknesses in utero can compensate by adopting healthy lifestyles; this confounding factor can have a significant impact on reducing mortality rates.

Bakker's work was further supported by Almond (2006), who tested the fetal origins hypothesis using the 1918 influenza pandemic data. He found that the birth cohorts in utero during this time period exhibited higher rates of physical disability later in life, as compared to other birth cohorts. The issue of whether genetics accounts for these differences is debated and further explored in the main paper. Almond (2011) provides more credible observational evidence to link in utero nutrition to other later-life benefits, including higher test scores, higher educational attainment, greater income and better health. The magnitude of these impacts are large and significant.

2.1.9 Medical Advances

The role of medical advances in contributing to declines in mortality rates have been attributed to innovation (Cutler, 2004). Some papers (McKeown (1975), McKinley (1977)) show that declines in mortality due to infectious diseases in the twentieth century occurred before the arrival of medical treatments. Jayachandran (2010) credits the role of a ground-breaking medical innovation - sulfa drugs, which treat bacterial infections - as an important element in the discussion of mortality rates. The paper shows that sulfa drugs led to a 24 to 36 percent decline in maternal mortality, 17 to 32 percent decline in pneumonia mortality, and 52 to 65 percent decline in scarlet fever mortality between 1937 and 1943. By leveraging the introduction of early antibiotic therapies, Bhalotra (2013) provides evidence that sulfa led to improved early-life health for blacks, thereby improving their socioeconomic status later in life.

2.2 Role of Income in Longevity

The role of income was also explained earlier 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. However, investments in health have been hypothesized to be correlated to income (Newhouse, 1997). However, it is not conclusive that increased life expectancy will lead to increased income (Acemoglu, 2006). Evans (2011) identified short-run mortality increases, following the receipt of social security payments, tax rebates, dividend payment program in Alaska and wage payments for military personnel - he finds that mortality rate decreases are significant and apparent across all causes of death.

The interconnectedness among life expectancy, income and health investments has made this area of study both challenging and complex. Income has been postulated to affect longevity through several different causal pathways (Salm, 2011). These mechanisms include nutrition (McKeown, 1976; Fogel, 2004), wherein veterans 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 veterans 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).

2.3 Pension Income of Veterans

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 19th and early 20th 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.

3 Historical Background

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 (Hacker, 2011) 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).

3.1 Pension Evolution post-Civil War

3.1.1 Northern States

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. Table 13 provides the pension rates over time from the period 1862 to 1912.

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.

3.1.2 Southern States

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[8]. In the end, confederate veterans never moved over to the federal

[8]'The materials in First Person Narratives of the American South reveal a region of proud people struggling to

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.

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.

3.2 Pensions in Oklahoma

Confederate veterans were eligible to apply for a pension in the state where they currently lived, even if they had served in a unit from a different Confederate state. In order to qualify for a pension, 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

reaffirm their independence and unique character within a legacy of defeat. After the war, the antebellum South, with the plantation at its core, took on the reputation of a golden age in the region's history. Post-war sermons, ceremonies such as monument dedications, veterans' reunions, and special holidays glorified the Old South and constituted what historians have called a "Lost Cause" movement, in which regional identity took the place of the Confederacy.' (Source: Library of Congress website) to its veterans[9].The Act also enacted the creation of the Board of Pension Commissioners[10], which was vested with the authority to hear and determine all applications for pensions. Veterans had to have resided in Oklahoma for 12 months prior to the passage of the bill to be eligible for the pension.

3.3 Pensions in Texas

Texas generally fared better than other Confederate states as no major battles were actually fought there, and 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.

The pension amounts from 1899 to 1928 are shown in Table 14. Over this time-period, pension amount increased from $22.32 to $208 annually.

[9] Oklahoma (formerly Indian Territory) was originally set aside for forced re-settlement of Native Americans.

[10] The Board voted to be discontinued in 1916 and the management placed under a salaried Pension Commissioner with an assistant.

3.4 Framework

Ehrlich and Chuma's adapted Grossman model (1990) derived a theory of the demand for life extension under certainty was derived. It shows that an upward shock in income, or in this case, an increase in pension income increases longevity. The increase in pension income represents an increase in initial endowment. Pension income is a form of wealth, as it is guaranteed income that lasts ones entire lifetime. This income, or wealth, increases the entire path of health stock. The theory was later extended to show the demand for life extension under uncertainty (Ehrlich, 2010). The adapted Grossman model provided the underlying framework for this study.

4 Data

4.1 Data sources

The data was extracted from various sources to form a consolidated dataset. Data for both Oklahoma and Texas veterans was extracted from online microfiche copies or digitized on indices set up by the state. Given the different formats and sources used to compile the data, the details of each record was extracted individually to form a 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 country databases for demographic and economic information retrieval. The lack of a central database for Confederate veterans and the paucity of data in many of the records (for example, date of birth for Oklahoma veterans and date of death for Texas veterans) led to challenges in creating an accurate and comprehensive database.

4.2 Oklahoma Veteran Sample Data

I relied on the Confederate pension file records, which can be found on the Oklahoma pension index cards (Figure 4). 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, I resorted to the ancestry.com website or to the Index to Oklahoma Confederate Pension Records developed by the Oklahoma Department of Libraries [11]. For each record, I attempted to locate the veteran based on distinguishing features such as name, state and county and extract the date of death.

The more challenging data to obtain for Oklahoma veterans was the date of birth. Since Oklahoma did not become a state until November 16, 1906, there is no central repository of birth records for that time period. The Oklahoma pension files do not include the date of birth of the veterans. Therefore, I looked up the veterans individually from `ancestry.com` and where a match was found (name, state, regiment), I extracted the year of birth if the information was available. This process of matching was done individually for each veteran record.

4.3 Pension Eligibility for Oklahoma veteran

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 honor-

[11] Index was authored by Larry Dobbs and edited by Tina Colloway (Oklahoma Department of Libraries).

able discharge and at least one year's residency in Oklahoma prior to submitting the application[12]. 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[13] . 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.

4.4 Texas Veteran Sample Data

The Texas veterans' data was derived from different sources. The random sample of Texas veterans' data was extracted from `ancestry.com`, placing restrictions on the time period of the study based on the selection criteria.

I first obtained the list of application numbers, names and the ancestry.com website link to the individual records.[14] This enabled me to go into each record in ancestry.com to extract additional information on each veteran. The basic data collected included the full name of the veteran, application date and pension file number from ancestry.com. Birth year was available for some of the records. In some cases, the birth year was also extracted based on pension file application forms (Figure 3) which provided the age of application and application date enabling the birth year to be

[12]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).

[13]This enabled 1,000 individuals to be on the pension roll in Oklahoma. The amount was raised to $48,000 per annum in 1917.

[14]I received assistance from Dr.Laura Salisbury (York University, Department of Economics, Toronto) to obtain a random list of veteran names and pension application numbers for Texan veterans extracted from ancestry.com website.

derived or in some cases 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. The Archives information provided the 5-digit pension application number and the county information. In total, 347 records were obtained this way.

The major challenge for completing the Texas dataset was discerning the date of death, as the information was neither written nor collected on the pension files. As such, I resorted to the Confederate graves registry to obtain death dates where available. This was done individually for each veteran. In total, I was able to match 201 records with the death dates.

4.5 County-level Data

The full veteran sample dataset was linked to the 1910 ICPSR dataset for socio-economic factors (school attendance, population, value of the livestock and labour expenses) at the county level. The controls take into account the different state of development between Texas and Oklahoma. Because Texas was a wealthier state, it was able to provide pensions earlier and in greater amounts than Oklahoma. In 1916, the annual pension amount was $63 for Texan veterans, more than three times of the Oklahoma pension ($20 per year).

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 county levels during this time period. To handle this limitation, the adjacent county-level information within the state was used as the proxy. Figures 5 and 6 show the county maps for both Oklahoma and Texas.

4.6 Study population and Study Period

The study population selected for this study are Confederate veterans who lived in two adjacent Southern states - Texas and Oklahoma[15]. 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. Though Oklahoma (known as Indian Territory) was home to many Indian tribes who fought in the war on both sides, the names on the sample pension rolls were all Anglo names, which indicated that Indian tribes who fought for the Confederates either did not apply for or were not approved for pensions. Texas was considered the "supply" 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.

The selection criteria restricts data to pension applications between mid-1900s and 1929. Since Oklahoma only started providing pensions in 1915, I selected the start year of 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. 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

[15] The Indian Removal Act of 1832 resulted in Oklahoma (known as the Indian Territory) being a region set aside for the residence of Indian tribes.

the start of the system in 1915. The Texan veterans started applying in the mid-1900s due to more recent disability. This enables a better comparison group, as it attempts to reduce the health differences between the two groups. At the same time, it enabled me to investigate the effect of larger pensions upon veterans at an earlier age, and how this impacted their longevity.

4.7 Timeframe

The timeframe of the study is Jan 1, 1916 to Dec 31, 1943[16].

4.8 Pension Amounts & Process

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 (Table 14). 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 (Table 14).

In Oklahoma, the pension amount was set at $1.66 per month or $20 per annum for each veteran. Payments were made quarterly in the amount of $5, and about one thousand veterans were eligible for this program. Sixty-five percent of the pension applicants were men aged between 65 to 80 years.

[16]The end date of the study timeframe represented the last year of death of the veteran.

4.9 Description of sample

The entire dataset included 339 veterans, 198 from Oklahoma and 141 from Texas. The mean age of death of the entire sample was 84.09 ± 6.26 years. The mean year of death was 1926 and the mean year of birth was 1842. The death dates for the entire database ranged from 1916 to 1943. The birth year ranged from 1828 to 1873. The ages of the entire sample ranged from 66 to 100 years (Table 1). The mean age of death of veterans from Texas is 84.98 ± 6.25 years and from Oklahoma is 83.45 ± 6.20 years.

4.10 Dependent and Independent Variables

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. Additional covariates were obtained from county-level data from ICPSR (Inter-university Consortium for Political and Social Research) - Historical, Demographic, Economic and Social Data for 1910 for two states. 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.

5 Empirical Strategy

5.1 Identification

In these states, only veterans who were indigent or disabled were eligible to receive pension; hence those were the ones veterans included in the study population. 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, through the enactment of the pension laws of 1899 in Texas and 1915 Oklahoma, respectively, affected mortality rates for eligible veterans. This is done 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 fourteen years earlier than the Oklahoma eligible veterans. I argue that delays in receiving pension increases mortality, as pension represent a permanent source of income that, in turn, will improve an individual's health through means like access to clean water and better sanitation. Better health likely leads to longer life.

I also examine how the differing amounts of pension income in the two states affect health. 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.[17] For Texas, the pension amount represented 38% to 39%

[17]Total personal income per capita in Oklahoma ranged from $94 to $114 in 1900. Total personal income per

of the total personal income.

Since individual-level data for a control group of Southern males who did not receive pension is not available, I estimate the differences in mortality between the Texas veterans and the Oklahoma veterans for the study period. In my analysis, I commence my study period in 1916, in which both groups are the recipients of pensions under the different laws. I also tried to account for health status of the different groups, as both groups of veterans needed to be alive in 1916 - this ensured that severely ill veterans who recently applied in Oklahoma, as well those who died within the year of the pension law enactment were not part of the sample.

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 ± 6.2 years and Texas veterans at 85 6.3 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[18]. Hence the sample seems to represent 'hardy' veterans who, despite their disability or indigent state, were extremely long-lived. The generalizability of these findings

capita in Texas ranged from \$136 to \$138 in 1900.

[18]Those that survived their first year have an average remaining life of 55.94 years in 1910.

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 twenty-six 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 seceded in 1861 to join the Confederacy) and therefore could have benefited from being part of the Union (or the United States as it was known during the Civil War) including representation in Congress and 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[19]. The presence of Native American veterans could result in biased results as their mistreatment during this period could have negatively affected their health. However, a cursory look at the names of those on the pension rolls from Oklahoma sample does not explicitly suggest Native American

[19]'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).

heritage. Still, there always remains the possibility that Native Americans may have anglicized their names for the pension application, failed apply for pensions or were denied.

5.2 Model Specification

I control for demographic and socio-economic factors at the county level for both states. Controls include the value of the livestock, labour expenses, population and percentage of children between the ages of ten and fourteen who are enrolled in school. I also control for year of birth of the veteran to account for increasing likelihood of disease states with increasing age.

The model specification is as follows:

$$Age_i = \theta_0 + \theta_1 ST_s + \theta_2 X_{cs} + \theta_3 Z_{cs} + \theta_4 U_i + \epsilon_{if} \tag{1}$$

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 impact of the different pension laws of the two states on the age of death of the veteran, controlled for the year of birth.

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

$$Log(Age_{death_i}) = \theta_0 + \theta_1 ST_s + \theta_2 X_{cs} + \theta_3 Z_{cs} + \theta_4 U_i + \epsilon_{if} \tag{2}$$

In equation (2), log(Agei) is the natural log of age of death of veteran i given that he is alive in the year 1916. STi 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.

In an OLS model, the estimators are unbiased if the model is linear in its parameters, the data is a random sample of the population, the errors have constant variance and the errors are normally distributed with a zero mean. Given the presence of binary data (ST=1 if veteran is from Texas, ST=0 if veteran is from Oklahoma), the normality assumption may not hold for this model. Hence, I investigated the odds of a veteran coming from either Texas or Oklahoma for each unit increase in the age of death. For this purpose, I use a logit model where state of the veteran is the outcome binary variable and the age of death is the predictor variable. I control for year of birth in the first model and then add the additional socio-economic covariates in the second model to enable comparison of nested models. The logit model took the following form:

$$P(Veteran\ is\ from\ Texas)_{itc} = f(\theta_0 + \theta_1 Age_i + \theta_2 X_{cs} + \theta_3 Z_{cs} + \theta_4 U_{+} \epsilon_{if}) \tag{3}$$

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.

5.3 Semi-elasticity of Income

To evaluate the pension income semi-elasticity 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:

$$\lambda_x(t) = e^{\beta_x} \lambda_0(t) \tag{4}$$

where λ_1(t) is the hazard function over time for a subject with a covariate value of x=1 and λ_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:

$$\begin{aligned} \lambda_x(t) =& e^{\beta_x}\lambda_0(t) \\ e^{\beta} =& \lambda_1(t)/\lambda_0(t) \end{aligned} \tag{5}$$

6 Results

Out of the total sample, 58.4% of the veterans are from Oklahoma with a mean age of death at 83.5 years (SD= 6.20 years); Texan veterans had a mean age of death at 85 years (SD=6.25). Tables 1b and 1c shows the range of the years of death and birth for both groups. Tables 11 and 12 shows the distribution of the year of birth and death for all the veterans.

I first present the results of the basic OLS model (Model I, Table 3). In this regression, I used the age of death as the dependent variable and the state as the only independent variables. I included all veterans in the sample who were alive in 1916 and did not restrict the sample to a particular death year. The results show a statistically significant difference in age of death between veterans in Texas and Oklahoma of 1.54 years (p=0.03). Texan veterans who had higher pension income over a longer period of time gained an additional 18.5 months or 1.54 years of life compared to their Oklahoma peers. Controlling for just the year of birth, veterans in Texas have a statistically significant increase of 1.23 years (p=0.04) of life compared to veterans in Oklahoma (Model II, Table 3). 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.

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 1.15 (p=0.06) additional years in longevity compared to veterans in Oklahoma (Model III, Table 3). The result shows the significant impact of the increase in pension income on the additional years of life gained for older-age veterans even after controlling for demographic and economic differences between the two states. Further, the findings show the increase in years gained (1.01 years, p=0.210) by controlling for all observable county-level factors. The year of birth remained a 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 next set of results focused on the log-linear model. I tested to see if the age distribution follows a normal distribution and it revealed that more robust results can be obtained with the use of log of age. The results of the log-linear model with the year of birth as a single covariate showed that veterans in Texas has a statistically significant increase of 0.015 log years (p=0.04) compared to Oklahoma veterans (Table 4). Veterans from Texas had a 1.5% increase in years of life compared to Oklahoma veterans. When all county-level covariates were included, the results show a statistically significant increase of 0.016 log years (p=0.04) for the Texas veterans (Model V) or 1.6% increases. These results provide additional evidence on the significant increase in additional years of life for Texan veterans[20] compared to their Oklahoma counterparts.

In all these variants of the OLS models, Texan veterans were shown to live longer than Oklahoma veterans (5% level of significance). Given the age of these veterans, their health conditions including

[20]The expected geometric mean of the age of death was exp (4.42) or 83.89 years.

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 final regression conducted was the logit model (Table 5) 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 1.04 (p=0.05). When the model included birth year and all the county-level controls, the odds ratio increased to 1.05 (p=0.02). All results were statistically significant at 5%.

To handle possible specification error arising from either the choice of the logit function or the possible non-linear relationship between the state and all the covariates, a test for detecting specification error was conducted. The model was run using the prediction value and the square of the prediction value. If the model was properly specified, the square of the prediction value will not show any significance. The linktest results (Table 7) showed that the logit model was properly specified. The assumption for homoscedasticity was also conducted. Figure 2 shows that graph for the homoscedasticity of residuals showing an even distribution of residuals. The graph shows that the data is homoscedastic which confirms the earlier results.

7 Semi-elasticity

Semi-elasticity was calculated to determine how an increase in pension income of one percentage point changes the time of death. The Cox proportional hazard model was run to obtain the semi-elasticity. In the single-covariate proportional hazard model, the hazard ratio was 0.8722 (Table 8) and 0.9389 when controlled for year of birth (Table 9). When the proportional hazard model was run with all the county-level covariates, the hazard ratio was 0.8874 (Table 10).

Based on this analysis, veterans from Texas show a 6.1% increase in years of life gained compared to Oklahoma veterans when controlled for only year of birth of the veterans. In the full-model with all county-level covariates, Texan veterans show an 11.2% increase in longevity compared to their Oklahoma peers[21]. The difference in pension income levels between the two states was wide at 1926-1927. At the time of death of the veterans, most Texan veterans received \$190 per annum compared to \$30 per annum for Oklahoma veterans resulting in \$160 difference in annual pension amounts. As a result, for every \$10 increase in annual pension income for these veterans, there was a 0.4% increase in years of life in the single-covariate model (birth year) and 0.7% increase in years of life when all county-level controls are taken into consideration[22].

8 Interpretation and Policy Relevance

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. In the adapted model by Ehrlich & Chuma, a model for the demand of longevity which was derived under conditions of certainty where demand for health was derived in conjunction with longevity and related consumption choices. The model 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. The adapted Grossman model 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

[21] Semi-elasticity calculated as (hazard rates - 1) or $e^{\beta-1}$

[22] Difference in longevity / difference in income =((10/160)*11.2) for full-covariates model

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 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.

The use of pension income enabled me to 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, I took 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 twenty-six years were able to significantly increase their longevity by as much as 1.4 years. For every $10 increase in pension income, the number of years lived increased by 0.4%. This increased to 0.7% when I control for all county-level differences.

There are several limitations of this study. Firstly, identification threats were identified earlier that may cause challenges for 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 my 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 is 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[23], there are more Natives than Texas or Oklahoma veterans could have been influence

[23]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

by Natives since Oklahoma was created from Indian territories. Using ICPSR county-level data[24], 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)[25]. However, the percentages remain low for both states and it is not known how many of the Natives made up the sample population.

Finally, another main limitation is the number of observations as the study had a total of 339 full observations. Though additional observations[26] will be beneficial, the results show statistical significance when using just one control variable (age of birth) with the current number of observations. With six covariates, the results remain significant. For an OLS regression, that can be considered as sufficient since the rule of thumb is generally 20 observations per covariate[27], indicating the need of at least 120 observations as a minimum.

Do these findings have relevance for our current times? In the US, 92% of the population aged 65 years and above received some form of Social Security pension benefits including lifetime pension income[28]. For many retired Americans, government old-age pension represents a primary source of income. It enables older Americans to avoid poverty by providing a guaranteed minimum level of monthly pension income. Since the 1930's, life-expectancy has steadily increased in the US as

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).

[24]The data collected was part of the interdisciplinary research team to collect information for about 500 counties in the Great Plains of the U.S. between 1870 and 2000 (Gutmann).

[25]Other demographic differences were detected between the two states - Blacks constituted 8% in Oklahoma compared to 27% in Texas; Mexican-Americans represented 4.8% in Texas compared to 0.15% in Oklahoma.

[26]Additional observations will be collected if the future intention is to send this paper for publication.

[27]*Regression Modelling Strategies - With Applications to Linear Models, Logistic Regression and Survival Analysis*, Harrell, Frank (2010), Springer-Verlag. Harrell listed the need for at least 10 events for each covariate in binary outcomes models.

[28]Figures based on 2004. Social Security Act was enacted by Congress in 1935 and in 2004, benefit payments totalled US$487 billion or approximately a quarter of the federal budget (Velloso, UN Report).

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 altering 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, my research has implications toward the development and delivery of cash transfer programs (in the form of pension income) in developing countries (Aizer, 2014). 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.

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10 Appendix: Tables and Figures

Table 1a: Number of Records from Oklahoma and Texas

State	Frequency	Percent	Cumulative Frequency
Oklahoma	198	58.41	58.41
Texas	141	41.59	100
Total	339	100	

Table 1b: Oklahoma: Year of Birth and Death

Variable	Observations	Mean	Std.Dev	Min	Max
Birth Year	141	1842	4.6217	1829	1849
Death Year	141	1927	5.4623	1916	1939

Table 1c: Texas: Year of Birth and Death

Variable	Observations	Mean	Std.Dev	Min	Max
Birth Year	198	1842	5.2616	1828	1873
Death Year	198	1926	5.9829	1916	1943

Table 1d: Age of Death

State	Observations	Mean	Std.Dev	Min	Max
Oklahoma	198	83.4494	6.2042	66	100
Texas	141	84.9858	6.2564	70	99

Table 2a: Oklahoma

Variable	Mean	Std. Dev.	Min	Max
School	11.035	1.008	7.5	12.48
Population	25746.36	14166.76	12861	85232
Value livestock	1716466	1374092	943206	6900000
Labour Expense	56569.09	29161.39	15740	238860
N	198			

Table 2b: Oklahoma

Variable	Mean	Std. Dev.	Min	Max
School	10.514	0.888	7.6	12.14
Population	28336.77	21468.6	1569	135748
Value livestock	1220962	572448.4	191185	2600000
Labour Expense	80320.64	80105.96	3070	353640
N	141			

Table 3: Ordinary-Least Square Regression Results

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Dependant Variable:			Age			
State	1.5363***	1.2296**	1.1529*	0.8557	0.9501	1.012
	(0.6860)	(0.6081)	(0.6303)	(0.7877)	(0.7902)	(0.8055)
Birth Year		-0.5818***	-0.5821***	-0.589***	-0.592***	-0.5915***
		(0.0599)	(0.006)	(0.0603)	(0.0603)	(0.0604)
School			-0.1467	0.0759	-0.097	0.0987
			(0.3131)	(0.1218)	(0.1227)	(0.1229)
Population				0	0	2.00E-07
				(0.0000)	(0.0000)	(2.00E-07)
Value-Lifestock					3.57E-09	3.87E-09
					(2.74E-09)	(2.84E-09)
Labour Expenses						-2.77E-08
						(6.77E-08)
Constant	83.4494	1155.59	1153.73	1168.8	173.64	1172.11
	(0.4424)	(110.5)	(110.64)	(111.11)	(111.06)	(111.27)
Observations	339	339	339	339	339	339
Adjusted R-Squared	0.0117	0.2257	0.2239	0.226	0.2276	0.2256

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

Table 4: Ordinary-Least Square Regression (Log of Age) Results

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Dependant Variable:			Log (Age)			
State	0.01834**	0.01469**	0.01379**	0.01416**	0.0155***	0.0163***
	(0.0081)	(0.0072)	(0.0074)	(0.0074)	(0.0075)	(0.0077)
Birth Year		-0.0069***	-0.0069***	-0.007**	-0.007***	-0.007***
		(0.0007)	(0.007)	(0.007)	(0.0007)	(0.0007)
School			-0.0017	0.0005	-0.001	-0.0011
			(0.0037)	(0.0041)	(0.0042)	(0.0043)
Population				0	0	2.82E-07
				(0.0000)	(0.0000)	(2.66E-07)
Value-Lifestock					4.18E-09	4.50E-09
					(3.36E-09)	(3.40E-09)
Labour Expenses						-3.47E-08
						(8.04E-08)
Constant	4.4214	17.1624	17.187	17.3491	17.4099	17.3914
	(0.0052)	(1.3)	(1.3111)	(1.3158)	(1.3156)	(1.3179)
Observations	339	339	339	339	339	339
Adjusted R-Squared	0.012	0.2271	0.2253	0.2268	0.2281	0.2262

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

Table 5: Logit Regression Results

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Dependant Variable:			State			
Age	-0.0396***	0.04**	0.0379*	0.0388*	0.044**	0.0516***
	(0.0178)	(0.0202)	(0.0209)	(0.0209)	(0.0215)	(0.02267)
Birth Year		0.00249	-0.0005	0.001	0.0079	0.0094
		(0.0252)	(0.0264)	(0.0266)	(0.0270)	(0.02858)
School			-0.5625***	-0.6013***	-0.4728***	-0.4026***
			(0.1268)	(0.1362)	(0.1430)	(0.1487)
Population				-5.81E-06	1.55E-06	0.00002***
				(7.47E-06)	(7.88E-06)	(9.36E-06)
Value-Lifestock					-5.64E-07	-1.30E-06
					(1.94E-07)	(3.17E-06)
Labour Expenses						1.75E-05
						(3.64E-06)
Constant	-3.676	-8.357	3.624	-0.542	-12.85	-16.6601
	(1.513)	(47.311)	(49.597)	(49.93)	(50.73)	(53.54)
Observations	339	339	339	339	339	339
Pseudo R-Squared	0.0108	0.01	0.06	0.061	0.088	0.1559

Table 6: Linktest for OLS regression (Age)[29]

Age	Coefficient	Std.Dev	P > |t|	95% Conf Interval	
_hat	-0.0213	2.2486	0.992	-4.444	4.401
_hatsq	0.0061	0.0133	0.65	-0.0202	0.0324
_cons	42.7986	94.5009	0.651	-143.089	228.686

[29]Since _hatsq is not significant, there is no specification error.

Table 7: Linktest Results for Logit Model

Age	Coefficient	Std.Dev	P > |t|	95% Conf Interval	
_hat	0.9924	0.1604	0	0.6779	1.307
_hatsq	-0.0214	0.1016	0.832	-0.2206	0.1776
_cons	0.0122	0.1408	0.931	-0.2638	0.2883

Table 8: Hazard Rates (State)

Variable	Hazard Ratio	Std.Error	P > |t|	95% Conf Interval	
State	0.8721	0.097	0.219	0.7011	1.0849

Table 9: Hazard Rates (State, Birth year)

Variable	Hazard Ratio	Std.Error	P > |t|	95% Conf Interval	
State	0.9389	0.105	0.573	0.754	1.169
Birth Year	1.0961	0.0132	0	1.07	1.122

Table 10: Hazard Rates (All covariates)

Variable	Hazard Ratio	Std.Error	P > |t|	95% Conf Interval	
State	0.8874	0.1072	0.323	-4.444	4.401
Birth Year	1.0981	0.0134	0	-0.0202	0.0324
School	0.9764	0.0629	0.712	-143.089	228.686
Population	0.9999	4.11E-06	0.466	0.9999	1
Value-Livestock	0.9999	5.74E-08	0.287	0.9999	1
Labor Expenses	1	1.28E-06	0.576	0.9999	1

Table 11: Distribution (Year of Death)

Year of Death	Frequency	Percentage	Cumulative Frequency
1905	10	2.95	2.95
1916	11	3.24	6.19
1917	9	2.65	8.85
1918	9	2.65	11.5
1919	6	1.77	13.27
1920	17	5.01	18.29
1921	15	4.42	22.71
1922	20	5.9	28.61
1923	16	4.72	33.33
1924	23	6.78	40.12
1925	25	7.37	47.49
1926	26	7.67	55.16
1927	20	5.9	61.06
1928	13	3.83	64.9
1929	21	6.19	71.09
1930	21	6.19	77.29
1931	17	5.01	82.3
1932	13	3.83	86.14
1933	7	2.06	88.2
1934	8	2.36	90.56
1935	9	2.65	93.22
1936	5	1.47	94.69
1937	2	0.59	95.28
1938	7	2.06	97.35
1939	4	1.18	98.53
1940	3	0.88	99.41
1941	1	0.29	99.71
1943	1	0.29	100
Total	339	100	

Table 12: Distribution (Year of Birth)

Year of Birth	Frequency	Percentage	Cumulative Frequency
1828	1	0.29	0.29
1829	1	0.29	0.59
1830	4	1.18	1.77
1831	6	1.77	3.54
1832	3	0.88	4.42
1833	11	3.24	7.67
1834	5	1.47	9.14
1835	6	1.77	10.91
1836	9	2.65	13.57
1837	7	2.06	15.63
1838	9	2.65	18.29
1839	17	5.01	23.3
1840	14	4.13	27.43
1841	26	7.67	35.1
1842	29	8.55	43.66
1843	32	9.44	53.1
1844	35	10.32	63.42
1845	34	10.03	73.45
1846	32	9.44	82.89
1847	27	7.96	90.86
1848	16	4.72	95.58
1849	8	2.36	97.94
1850	1	0.29	98.23
1851	2	0.59	98.82
1852	2	0.59	99.41
1854	1	0.29	99.71
1873	1	0.29	100
Total	339	100	

Table 13: Pension Rates based on age and length of service for Union Army Veterans

Rates based upon age and length of service (Act of May 11, 1912)							
	90 days	6 Months	1 year	1.5 years	2 years	2.5 years	3 years
62 years	$13	$13.50	$14	$14.50	$15	$15.50	$16
66 years	$15	$15.50	$16	$16.50	$17	$18	$19
70 years	$18	$19	$20	$21.50	$23	$24	$25
75 years	$21	$22.50	$24	$27	$30	$30	$30

Source: U.S. Pension Bureau Orders, Instructions and Regulations Governing the Pension Bureau (1915), Linares (2001)

Table 14: 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%

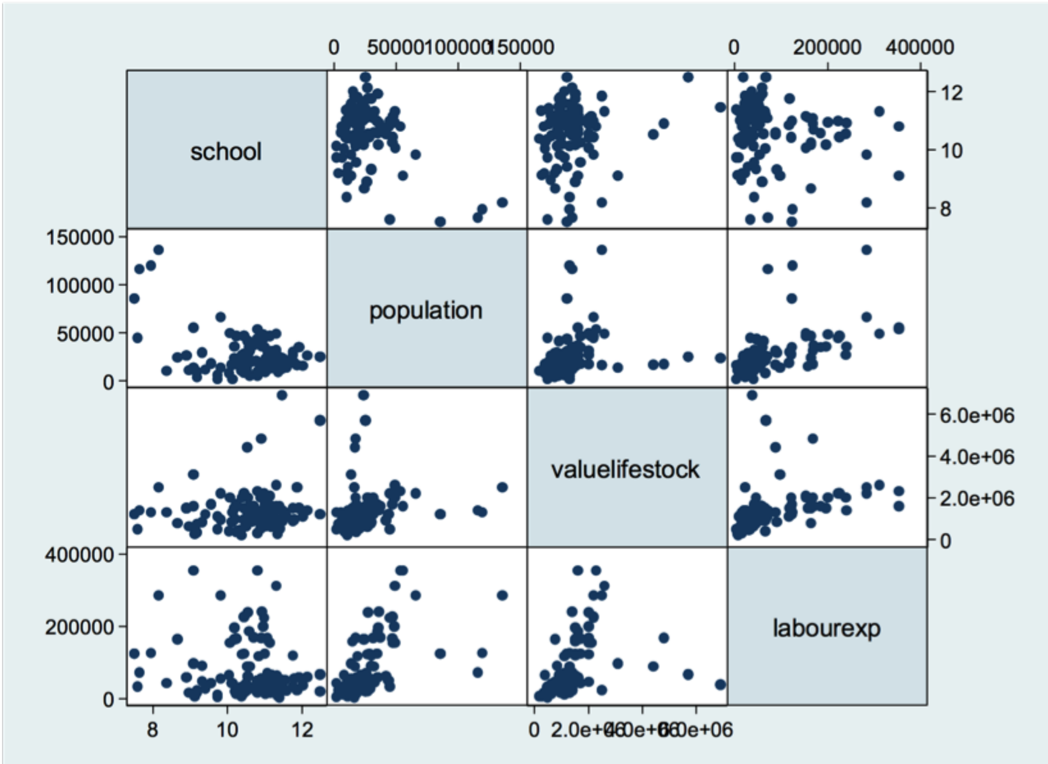


Figure 1: Scatter Plot of County Covariates

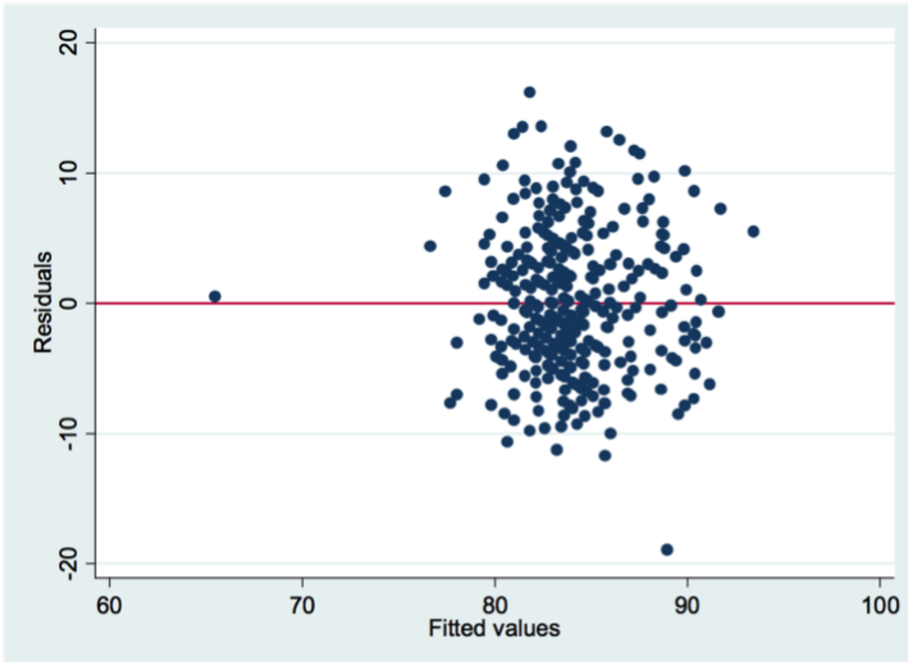
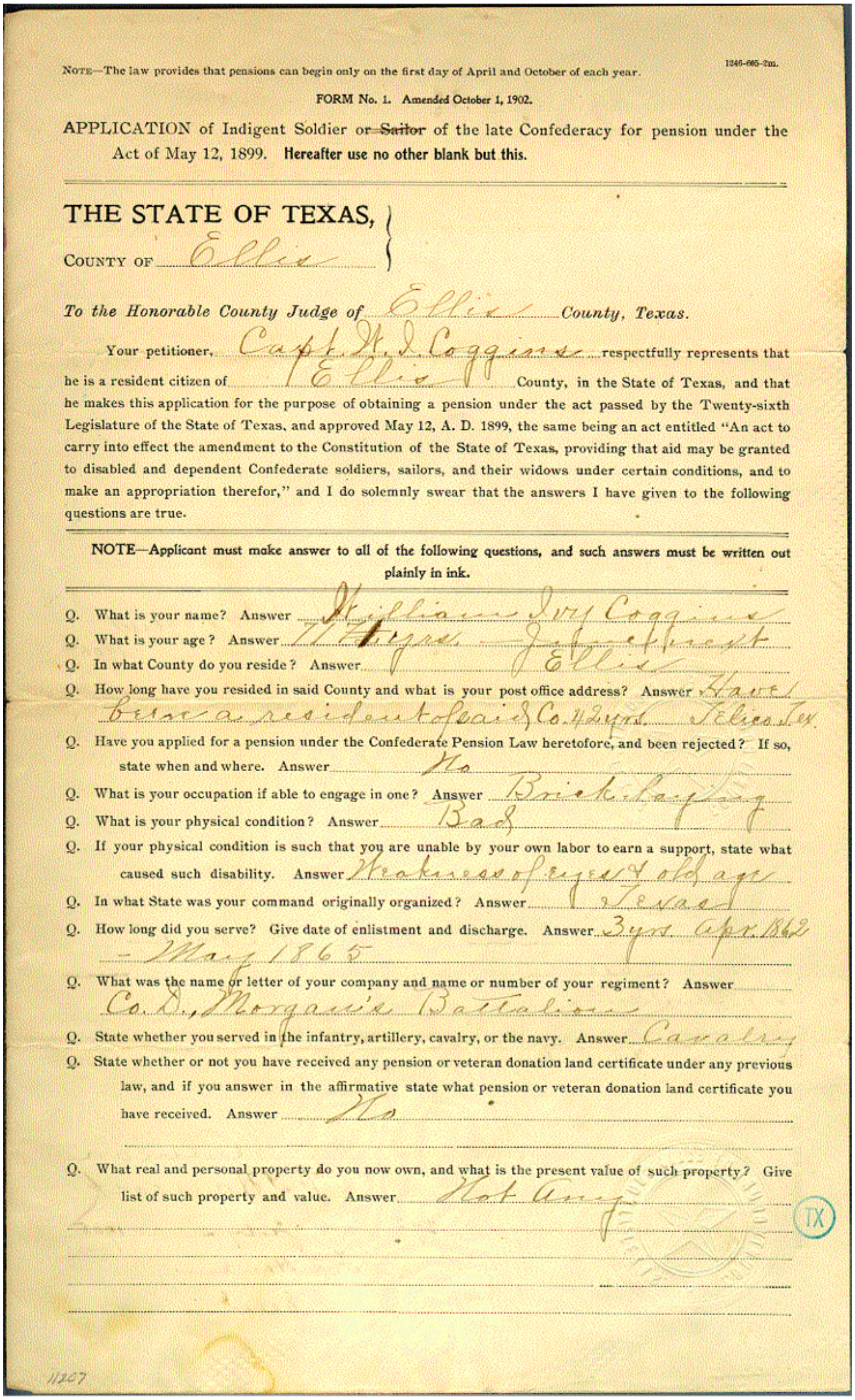


Figure 2: Homoscedasticity of Residuals



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

1246-665-2m.

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. I. 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. July first

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

TX

11207

Figure 3: Sample Texas Pension Application

11207 ✓

Endorsements Hereon for Comptroller's Use Exclusively.

FORM No. 1—AMENDED.
OCTOBER 1, 1902.

Confederate Pension Application.

Name of Applicant.

Capt. W. L. Coggins

Ellis *County,*

Post Office Telico

Comptroller's File No. 11207

I have carefully examined the within application for pension, together with the proof in support thereof, and I recommend that the application be Approved

SEP 27 1905

this ... *day of* ...

A. D. ...

E. A. Bolmes

Chief Pension Clerk.

I hereby ... *the within application for pension, this* SEP 27 1905 *day of* ... *A. D.* ...

J. W. Stephens

Comptroller

No Application Rejected by County Judge or County Commissioners Should Be Forwarded to Comptroller.

VON BOECKMANN-JONES COMPANY, PRINTERS, AUSTIN, TEXAS.

W. L. Hancock
B. F. Fairbanks
Sam Andrews, Thos. Mulligan

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.

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

(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

F. L. Hawkins

(SEAL)

County Judge Ellis County, Texas.

AFFIDAVIT OF PHYSICIAN.

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 — Dr A. R. King —, who is a reputable practicing physician of this County, who being by me duly sworn on oath, states that he has carefully and thoroughly examined W. J. Coggins applicant for a pension, and finds him laboring under the following disabilities which render him unable to labor at any work or calling sufficient to earn a support for himself: I find him unable to do manual labor on acct of deficient eye sight. then old age also, renders him unable to completely support himself.

(Signature of Physician) A R King.

Sworn to and subscribed before me this 2d day of August A. D. 1905

F. L. Hawkins

(SEAL) County Judge Ellis County, State of Texas.

CERTIFICATE OF COUNTY JUDGE.

THE STATE OF TEXAS,
COUNTY OF Ellis } I, F. L. Hawkins

County Judge of Ellis County, State of Texas, do hereby certify that on the 17th day of August A. D. 1905, before me came on to be heard the application of W. J. Coggins for a pension under the Confederate Pension Law of this State, Approved May 12, A. D. 1899; that the answers of said applicant to the questions propounded were made under oath as the same appear in writing in the foregoing application; that the affidavits of the witnesses who are credible citizens were made before me as the same hereinbefore appear, and that the foregoing affidavit of Doctor A. R. King who is a reputable practicing physician of this county, was made before me. I also certify that the said applicant W. J. Coggins, is not an inmate of the Texas Confederate Home, nor otherwise disqualified under the provision of Section 12, of the Confederate Pension Law. I further certify that after considering all the proceedings had before me relative to the said application for a pension by the said W. J. Coggins I find the said applicant is lawfully entitled to the pension provided by the Confederate Pension Law of this State, and I hereby approve said application.

Witness my hand and seal of office at Waxahachie this 17th day of August — A. D. 1905

F. L. Hawkins

(SEAL) County Judge — Ellis — County, State of Texas.

CERTIFICATE OF COUNTY COMMISSIONERS.

THE STATE OF TEXAS,
COUNTY OF Ellis } We, the undersigned members of the Commissioners Court of Ellis County, Texas, hereby certify that the foregoing application of — W. J. Coggins — for a pension, together with the proof in support thereof, was duly submitted by Hon. — F. L. Hawkins — County Judge of this — Ellis — County, to the Commissioners of this — Ellis — County, at a regular term thereof on the 18th day of August — A. D. 1905, and after a careful consideration of the same we find the said applicant is lawfully entitled to the pension provided for by the Confederate Pension Law of this State, and we hereby approve said application.

Witness our hands and seal of office at Waxahachie this 18th — day of August — A. D. 1905

(Signature of Commissioners)
H. L. Mitchell
Tate Noel
C. W. Irvin
Lee Moore

(SEAL)

TX

11207

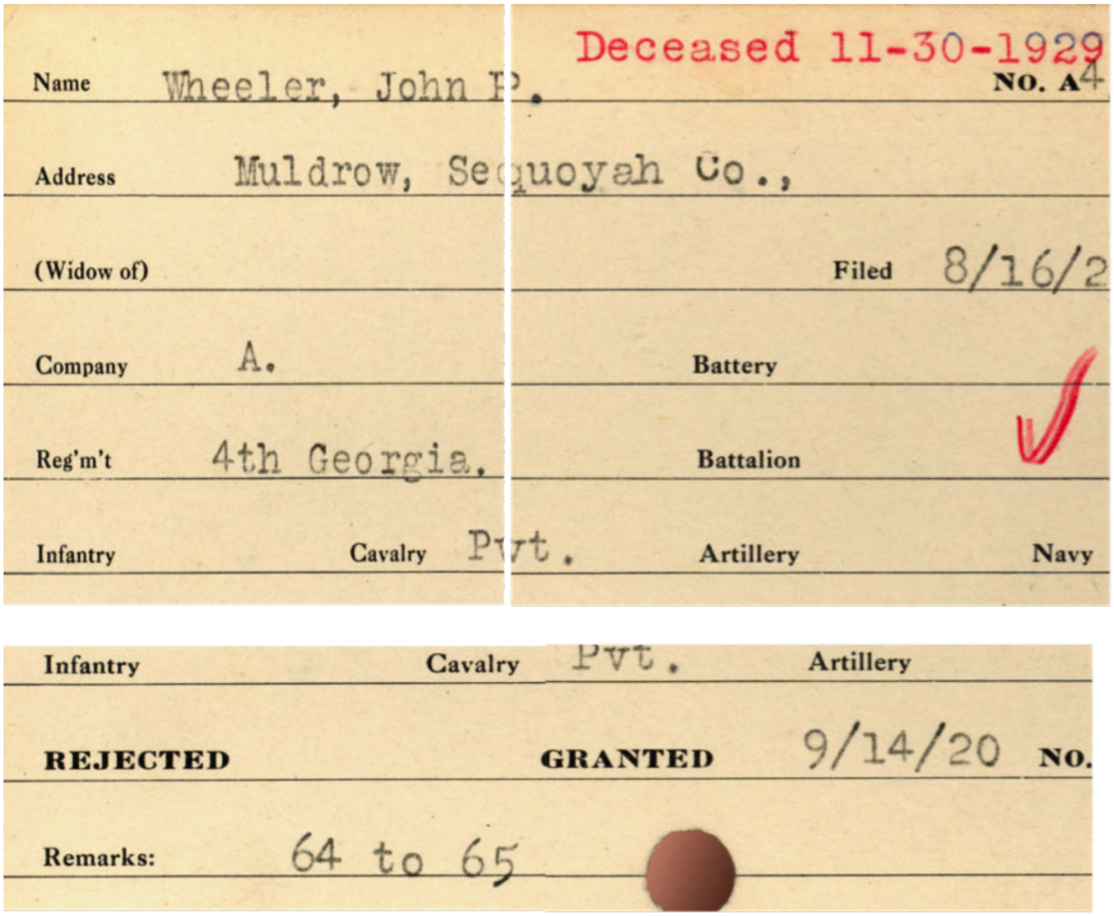

Deceased 11-30-1929
Name Wheeler, John P. NO. A4
Address Muldrow, Sequoyah Co.,
(Widow of) Filed 8/16/2
Company A. Battery
Reg'm't 4th Georgia. Battalion
Infantry Cavalry Pvt. Artillery Navy
Infantry Cavalry Pvt. Artillery
REJECTED GRANTED 9/14/20 NO.
Remarks: 64 to 65

Figure 4: Oklahoma Pension File Record Illustration

To Hon. Commissioner of
Pension, State of Oklahoma

Orr 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,
J M Gregory
J G Goodman

William his mark B. Wilson

STATE OF OKLAHOMA,
COUNTY OF Love

Orr 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 9 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.

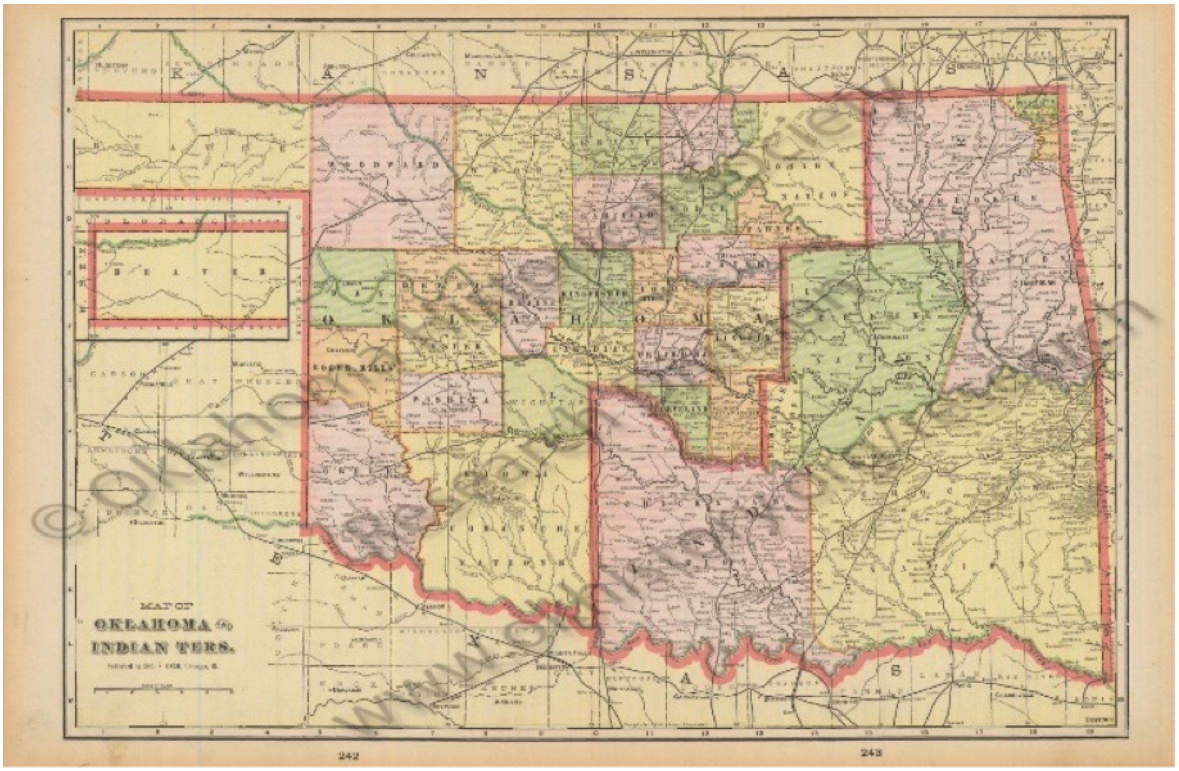


Figure 5: Maps of Oklahoma[30] counties

[30]Oklahoma counties: **Counties formed from Indian Territory**
Adair, Atoka, Bryan, Carter, Cherokee, Choctaw, Coal, Craig, Creek, Delaware, Garvin, Haskell, Hughes, Johnston, Latimer, LeFlore, Love, Marshall, Mayes, McClain, McCurtain, McIntosh, Murray, Muskogee, Nowata, Okfuskee, Okmulgee, Ottawa, Pittsburg, Pontotoc, Pushmataha, Rogers, Seminole, Sequoyah, Tulsa, Wagoner, Washington

Counties formed from Oklahoma Territory
Alfalfa, Beckham, Blaine, Caddo, Canadian, Cleveland, Comanche, Cotton, Custer, Dewey, Ellis, Garfield, Grant, Greer, Harmon, Harper, Jackson, Kay, Kingfisher, Kiowa, Lincoln, Logan, Major, Noble, Oklahoma, Osage, Pawnee, Payne, Pottawatomie, Roger Mills, Washita, Woods, Woodward

Counties formed from both territories (mostly the Indian Territory)
Grady, Jefferson, Stephens

Panhandle counties
Beaver, Texa and Cimmaron

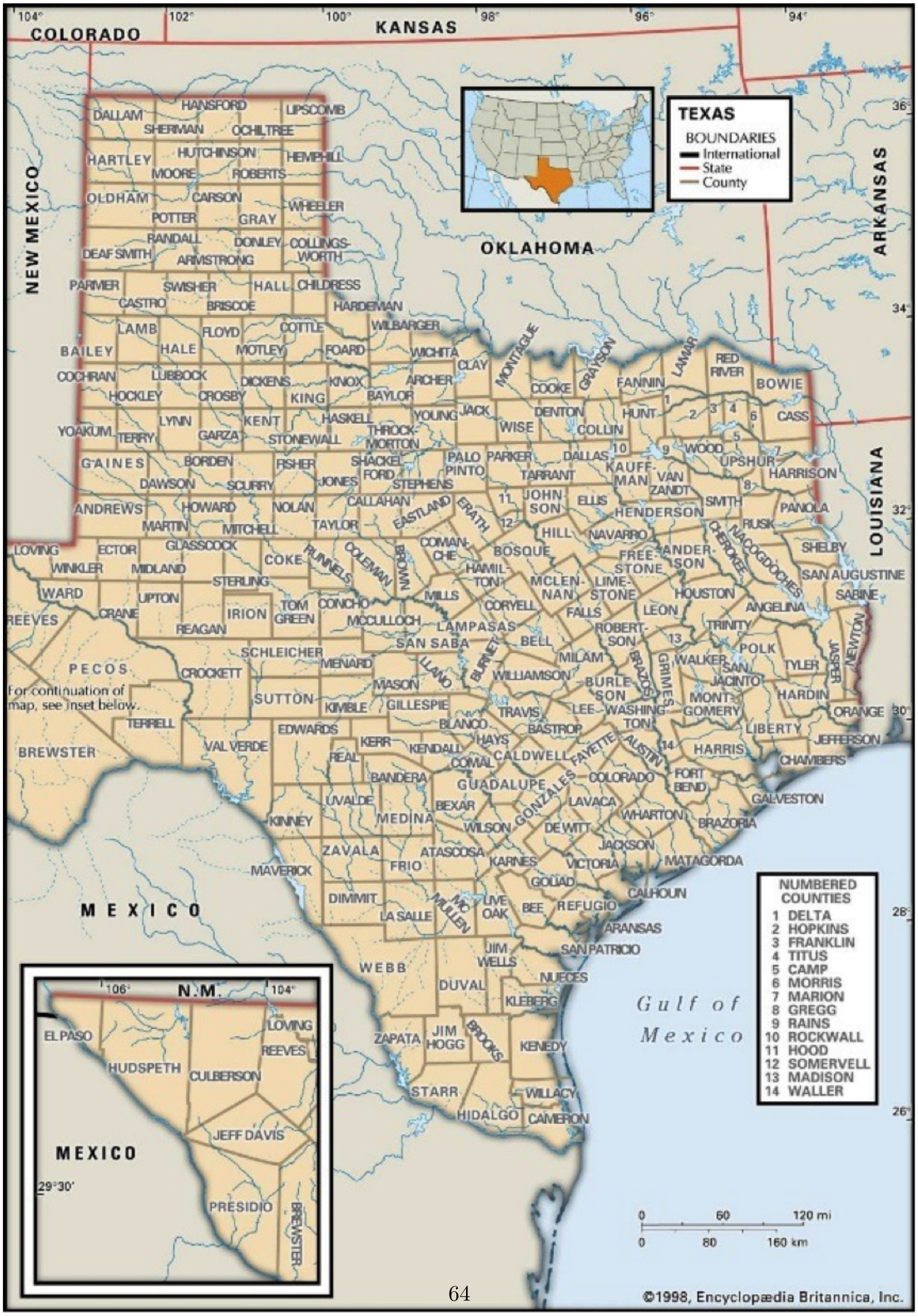


Figure 6: Maps of Texas counties