“AFRAID TO BREATHE”: UNDERSTANDING NORTH CAROLINA’S EXPERIENCE OF THE 1918-1919 INFLUENZA PANDEMIC AT THE STATE, LOCAL, AND INDIVIDUAL LEVELS

by

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A dissertation submitted to the faculty of
The University of North Carolina at Charlotte
in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in
Public Policy

Charlotte

2018

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ABSTRACT

LAUREN AMANDA AUSTIN. "Afraid to Breathe": Understanding North Carolina's Experience of the 1918-1919 Influenza Pandemic at the State, Local, and Individual Levels. (Under the direction of DR. WILLIAM P. BRANDON)

This dissertation is the first comprehensive, detailed study of a single state's experience of the 1918-1919 influenza pandemic at state, local and county, and individual levels. Its two articles provide quantitative analyses of a unique new statewide database and traditional historical narrative integrating institutional action and individual experience. **Article 1**, a quantitative examination of all death certificates (N=11,836) for October 1918 and March 1919 and the 1920 Census (N=2,561,959), employed multinomial logistic regressions, OLS regressions, and ArcGIS mapping. **Results** ($p \leq 0.05$): Singles were less likely to die of flu than marrieds but more likely to die of all other causes; blacks were more likely to die from flu than whites; black subgroups received less treatment than whites; children received less treatment than other age groups; Tidewater and Coastal Plain regions had greater standardized mortality while the Mountains, less than other regions. Findings confirmed literature reporting lower death rates among elderly, but not lower black mortality nor higher rates in manufacturing centers. Epidemiological evidence suggested flu virus mutations by March 1919. **Article 2**, a qualitative account of people's experience, used government archives, newspapers, and letters. **Results**: A growing desensitization — or "inurement" — to the epidemic as early as October 1918, due to government downplaying its seriousness and emphasizing the war effort, officials instructing the public to remain calm and maintain normality, businessmen wanting to restore sales, and boredom with quarantine measures.

DEDICATION

To those whom I love –

Because you have supported, guided, encouraged, and believed in me…

For you I persevere.

ACKNOWLEDGMENTS

The first and foremost position of thanks for anything that I achieve always belongs to my parents. Thank you for supporting me in my decision to go back to school yet again and for pushing me to follow through the adventure that it became. When most people would have given up, your lessons of persistence, determination, strength, and outright stubbornness helped me overcome every obstacle and reach my goal. Extra thanks goes to my mama for relieving me of some of my quantitative coding burden.

Immense appreciation also goes to my committee members. Each of you agreed to come aboard this dissertation when the odds were stacked against the completion of my degree and your dedication to my success helped keep me on track of what was a difficult timeline. For all of the time, effort, advice, and encouragement that they have given me, Dr. Bill Brandon, Dr. Mark Wilson, Dr. Steve Sabol, and Dr. Jim Laditka have my deepest appreciation. My gratitude especially goes out to Dr. Brandon for taking on one last dissertation, helping me carve a new path through the program, providing countless hours of brainstorming, editing, and revisions, and showing me how a true dissertation chair interacts with their student. I would also like to extend my thanks to Dr. Martha Kropf for standing up for me and being my champion when so many others expected me to quit.

Last, but certainly not least, thank you to my friends for putting up with me through this overly long, dramatic, and often ridiculous process. You know who you are so thank you for the phone calls, venting sessions, coffee dates, pep talks, and words of encouragement. Each of you make my life brighter and my dark days fewer. Special thanks goes to my fish for your endless support, loyalty, and fierce protection.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

It is not uncommon that bodies should be piled from floor to ceiling, morgues should be overflowing, and streets should be filled with corpses when a country is in the midst of fighting a world war. However, it is uncommon to see bodies spread everywhere when the country in question is thousands of miles away from the nearest battleground. This sight was almost universal in the fall and winter of 1918-1919 when the pandemic commonly yet erroneously referred to as "Spanish Influenza" swept rapidly through the United States and across North Carolina, leaving more than 13,000 dead, the majority of whom had been healthy and vital young adults. Yet as quickly as it appeared on the red clay and sandy soil of North Carolina, it effectively disappeared; a pandemic, which killed between fifty and one-hundred million people worldwide in a remarkably short period, was seemingly forgotten.[1]

BACKGROUND OF 1918-1919 INFLUENZA PANDEMIC RESEARCH

For the first time since it occurred one-hundred years ago, the influenza epidemic of 1918-1919 has become popular knowledge around the world. Prior to the first international conference on the history of the pandemic in Cape Town, South Africa in 1998, where only thirty-six scholars gathered, knowledge of the epidemic was largely

[1] John M. Barry. *The Great Influenza: The Story of the Deadliest Pandemic in History.* (New York: Penguin, 2004), 397-398; Alfred W. Crosby. *American's Forgotten Pandemic: The Influenza of 1918, Second Edition.* (Cambridge: Cambridge University Press, 2003), 314-315.

limited to a handful of academics.[2] Throughout the twentieth century, few pieces of literature even referenced the epidemic, much less focused on it; Katherine Ann Porter's *Pale Horse, Pale Rider* and Thomas Wolfe's *Look Homeward, Angel* being the most prominent.[3] Few scholars researched the subject prior to the 1998 conference, with Alfred W. Crosby, William Beveridge, June Osborn, and David Cockrell being among the few. The 1998 Cape Town conference sparked a volume of research papers from those in attendance, papers which examined the pandemic from four main viewpoints: as an epidemiological episode, as an event of high drama, as a social and public health crisis, and as the object of a state-of-the-art scientific adventure.[4]

Human cases of H5N1 appearing in Asia in 1997 and 1999, an outbreak of SARS (Severe Acute Respiratory Syndrome) in Asia and North America in 2003, a swine flu outbreak in Mexico in 2009, and fears of bioterrorism sparked from the events of 9/11 as well as the anthrax scare that immediately followed it all played a part in steering researchers to deeply study past epidemics in order to glean lessons that could help in future outbreaks.[5] Out of this need sprang an interest in the influenza epidemic of 1918-1919 and the resulting surge of scholarly and scientific works about that pandemic. This wave of flu historians and researchers has been at the helm of applying fresh analytical frames like class and gender to bear on the epidemic, whereas previous scholars such as

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[2] Howard Phillips. "The Recent Wave of 'Spanish' Flu Historiography." *Social History of Medicine* 27:4 (2014), 789-808.
[3] Elizabeth Outka. "'Wood for the Coffins Ran Out': Modernism and the Shadowed Afterlife of the Influenza Pandemic." *Modernism/modernity* 21:4 (November 2014), 937-960.
[4] Phillips. "The Recent Wave," 790.
[5] Ibid., 791.

Crosby, Beveridge, Osborn, and Cockrell had mainly focused on general accounts of the pandemic.[6]

Historian Howard Phillips notes it is in the twenty-first century that the relationship between World War I and the Great Flu has come under closer scrutiny, with historians asking how far the war was responsible for the mutation of a mild flu virus into a killer, how far it was responsible for the virus's dissemination, and how far the killer virus affected the conduct and even the outcome of the war. Phillips also notes that the long-term cost of the suppression of memories related to the epidemic could be high;[7] historian Susan Kent takes this statement one step further by arguing that the unresolved trauma of the war and the epidemic and its resulting force of emotions was decisively formative for political cultures between the wars.[8] Phillips concludes that psychological issues such as these must be probed not just in the United States, but globally, if the full effect of the pandemic is to be weighed. This, in turn, will allow historians to determine more clearly the epidemic's common social, emotional, and psychological impact across the world at not only broad levels but also at the level of individuals.[9] This need has come to light due to scholars' realization that to make full sense of a pandemic's many-sided, complex, interconnected, and transitory character, it must be viewed through numerous lenses at the same time.[10]

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[6] Ibid., 800.
[7] Phillips. "The Recent Wave," 807.
[8] Susan K. Kent, *Aftershocks: Politics and Trauma in Britain, 1918-1931*. (Basingstoke: Palgrave Macmillan, 2009), 4.
[9] Phillips. "The Recent Wave," 807.
[10] Ibid., 791.

The oblivion that claimed memory of the Spanish Influenza begs comparison with history's best-documented wartime epidemic, the plague that struck Athens in 430 BCE, the second year of the Peloponnesian War. Thucydides' precise clinical description (based both on personal experience as a patient and observation of other cases), the lack of effective medical treatment, the experience of universal vulnerability without protection by age, gender, status, piety, or wealth, the common psychological and behavior responses, and the breakdown of social, health, and religious conventions and norms (especially burial practices), could almost be a contemporary news report, perhaps of some epidemic in Africa. Like the second wave of the 1918-1919 flu, the 430 BCE epidemic so vividly recorded by Thucydides arrived in Attica first in Athens' port of Piraeus and was thought to have arisen in distant, foreign lands. Thucydides reports that the plague so weakened a combined-arms attack on the Peloponnese that the fleet and army returned to Athens having lost over a quarter of its 4,000-heavy infantry (the Greek world's principal battlefield unit). Rather than ignoring the plague after it had waned and other setbacks in the war, Pericles was obliged to give one of the set speeches for which Thucydides is so famous to rally the flagging spirits of Athenians and combat their war weariness (in a war that was to last twenty-eight years). "Cease then to grieve for your private afflictions," Pericles counsels his fellow countrymen, "and address yourselves instead to the safety of the commonwealth."[11] Pericles himself died in a resurgence of the plague in the following year; both of his legitimate sons also died of the disease.

[11] Thucydides. "History of the Peloponnesian War." Translated by Richard Crawley. London: J.M. Dent & Sons, Ltd., 1914. 138.

RECENT TRENDS OF 1918-1919 INFLUENZA PANDEMIC RESEARCH

Broad analyses of the 1918-1919 have been published over the past few decades, with researchers such as David Patterson, Gerald Pyle, Jeffrey Taubenberger, and David Morens conducting multinational scientific examinations of flu deaths during the multiple waves of the 1918 pandemic. Social researchers such as Nancy Bristow have conducted broad sociological examinations of reactions to the epidemic, compiling the widespread experiences of patients, families, physicians, nurses, and public health officials to better understand how individuals in the United States understood and coped with the epidemic. Along with these broad studies, scholars such as Patricia Fanning, James Shidler, Peter Tuckel, Sharon Sassler, Richard Maisel, and Andrew Leykam have conducted microanalyses of the diffusion and experience of influenza in specific towns across the United States, such as Norwood, Massachusetts, Mattoon and Charleston, Illinois, and Hartford, Connecticut. These microanalyses are specific to those small areas and their outcomes cannot therefore be applied to other cities or larger areas.

However, Nancy Bristow cautions against the growing research trend that emerged in the past decade. She notes that broad studies, while useful to understanding the biological nature of the epidemic, stifle the individual experience and hush the realities of different and disparate circumstances during the pandemic.[12] Similarly, she notes that microstudies of the epidemic in specific cities, towns, or minority populations lose the sense of the larger, tragic, overwhelming loss of life experienced at the broader level.[13] Bristow's observations bring to light a hole in the field of 1918 influenza

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[12] Nancy K, Bristow. *American Pandemic: The Lost Worlds of the 1918 Influenza Epidemic.* (Oxford: Oxford University Press, 2012), 194.
[13] Ibid.

epidemic study; mainly, that it lacks a comprehensive broad-scale study that retains the individual-level experience.

PURPOSE AND AIMS OF THE CURRENT STUDY

This dissertation aims to fill that hole by providing both quantitative and qualitative studies that each contain tri-level experiences of the epidemic in North Carolina: state level, county level, and individual level. The quantitative chapter, "'Falling Around Us 'As Thick as Leaves in Vallombrosa': A Tri-Level Quantitative Analysis of North Carolina's Experience with the Influenza Epidemic of 1918-1919," utilizes a unique dataset composed of more than 11,000 coded death certificates filed in North Carolina in October 1918 and March 1919 to provide statistical analysis pertaining to race, sex, age, and geographical likelihood of dying from influenza during the epidemic. This database is the first statewide dataset; previously, no epidemiological study of population mortality using modern analytical techniques was possible. The qualitative chapter, "'We Hear of So Many Deaths That We Hardly Take Notice These Days': A Tri-Level Qualitative Analysis of North Carolina's Response To The Influenza Epidemic," examines a wealth of previously untapped sources from state archives, local newspapers, and individual letters between loved ones to provide unique and never-before-explored viewpoints of the epidemic and the fears, challenges, and attitudes towards it.

This dissertation is a unique and greatly needed examination of the 1918 influenza, at once both broad at the state level and microanalytical at the individual level. The goal is that this distinct and exhaustive analysis will provide knowledge of the

epidemic that can be applied to individuals not just of the global community or of a nation or town, but of a state full of different races, classes, beliefs, and socioeconomic status. To understand more clearly how different individuals living in the same moderately-sized area experienced life and death during the epidemic and how they dealt with the repercussions of those experiences both as individuals and collective groups is to better understand the epidemic itself at a level never before seen in scholarly research. This dissertation fills that void and provides a thorough accounting of the 1918-1919 influenza epidemic in North Carolina through the use of detailed quantitative and qualitative analyses that pair together to form a thorough and distinctive understanding of North Carolina's experience with the Blue Death of 1918.

CHAPTER 2: "FALLING AROUND US 'AS THICK AS LEAVES IN VALLOMBROSA'": A TRI-LEVEL QUANTITATIVE ANALYSIS OF NORTH CAROLINA'S EXPERIENCE OF THE 1918-1919 INFLUENZA PANDEMIC

INTRODUCTION

The influenza epidemic of 1918-1919 swept through the United States and the rest of the world like an infectious tidal wave, killing people with unprecedented frequency. "It killed more people in twenty-four weeks than AIDS has killed in twenty-four years, more in a year than the Black Death killed in a century," noted historian John M. Barry.[1] No state in the United States escaped its wrath; North Carolina's coastal position and important role in wartime manufacturing and military training meant that it was likely to have experienced elevated mortality during the epidemic. However, no study of the flu epidemic has ever examined just how North Carolina fared in comparison with national averages, which geographic regions within the state were the hardest hit, or what characteristics of individuals put them at greatest risk of death. This article explores North Carolina's experience with the 1918-1919 influenza epidemic at both the county and individual levels and examines the state of North Carolina's provision of healthcare to flu victims during this period.[2]

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[1] John M. Barry, *The Great Influenza: The Epic Story of the Deadliest Plague in History* (New York: Penguin, 2004), 5.

[2] Portions of the material in this chapter will appear in Lauren A. Austin and William P. Brandon, "Chapter 15: Pandemic and War, 1918-1919: Preliminary Analysis of New North Carolina Influenza Data," in *North Carolina during the First World War*, Edited by Steven Sabol and Shepherd W. McKinley (Knoxville TN: University of Tennessee, 2018), forthcoming.

Background: North Carolina in the Early Twentieth Century

All case studies require some general understanding of the particular context that gives rise to the empirical data. Reports of studies of phenomena far removed in time or space from the contemporary investigator or reader require more explanation than the usual evaluation of some contemporary health services innovation or response to a disease new to the U.S. Thus, any illuminating quantitative analysis of the influenza epidemic of 1918-1919 must be informed by the great differences between North Carolina in 1918 and in 2018. Without such understanding, a researcher misled by well-publicized images of other states in the early 1900s may try to investigate the role of independent variables that are irrelevant in North Carolina. For example, unlike factories in the north, which relied on foreign immigrant labor, as late as 1920 when industrial production was soaring in North Carolina, the state's entire population of over two and a half million was only 0.3% foreign born. Diversity in North Carolina's population was confined to the black-white racial divide,[3] which had only become cemented in Jim Crow laws in the 1890s,[4] and most individuals of either race had been born in the state. Despite the growth of millwork after the end of Reconstruction, most occupations in North Carolina still related to agricultural production in some way and 80.8% of residents in 1920 lived in areas that the Census classified as rural.[5]

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[3] In 1920, North Carolina reported a statewide diversity of 69.5% white, 30% black, and 0.5% other. United States Census, 1920. www.usa.ipums.org

[4] For more on the segregation and racial divide of North Carolina, see Jim Hanchett, *Sorting Out the New South City: Race, Class, and Urban Development in Charlotte, 1875-1975* (Chapel Hill: The University of North Carolina Press, 1998); R.D.W. Connor and Clarence Hamilton Poe, *The Life and Speeches of Charles Brantley Aycock* (Garden City, New York: Doubleday, Page & Company, 1912); U.S. Supreme Court, Plessy v. Ferguson, 163 U.S. 537 (1896).

[5] United States Census, 1920.

By the early 1900s, the state's economy was dominated by the production of tobacco, timber, and textiles such as cotton and wool. In 1896, the North Carolina Board of agriculture reported 242 tobacco mills in the state, 182 cotton mills, and 10 woolen mills; also, the area around High Point had become the furniture capital of the United States and the state was crisscrossed with new railroad lines that connected the numerous new mill towns sprouting up across North Carolina.[6] By 1919, the number of mill workers increased 25% from 53,703 in 1914 to 67,297 in spite of widespread labor shortages.[7]

However, while North Carolina was experiencing a boom in its number of mills, factories, and tobacco, timber, and textile production, the majority of the state remained markedly rural. In 1900, there were 224,637 farms in North Carolina, but by 1925 that number had increased to 283,482 North Carolina farms.[8] The 1920 Census noted that only seven of North Carolina's 100 counties boasted a population of more than 50,000 (Buncombe, Forsyth, Gaston, Guilford, Mecklenburg, Robeson, and Wake).[9] Only four cities in the state had populations of more than 25,000 (Winston-Salem: 48,395; Charlotte: 46,338; Wilmington: 33,372; and Asheville: 28,504; Raleigh fell just shy at 24,418).[10] In 1912, North Carolina had approximately 48,000 miles of roads but only

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[6] David Walbert. "Industrialization in North Carolina." http://learnnc.org/lp/editions/nchist-newsouth/4745
[7] Annette Cox, "Towels, Socks, and Denim: World War I and North Carolina's Cotton Mills," in *North Carolina during the First World War*, Edited by Shepherd W. McKinley and Steven Sabol (Knoxville: University of Tennessee Press, 2018), forthcoming.
[8] "History of Business in North Carolina – Overview," http://www.historync.org/
[9] Richard L. Forstall, "Population of States and Counties of the United States: 1790-1990." U.S. Department of Commerce, Bureau of the Census, Population Division. Washington, DC: U.S. Government Printing Office, 1996.
[10] Campbell Gibson and Kay Jung, "Historical Census Statistics on Population Totals by Race, 1790 to 1990, and By Hispanic Origin, 1970 to 1990, For Large Cities and Other Urban Places in the United States." U.S. Census Bureau, Population Division. Washington, DC: U.S. Government Printing Office, 2005.

about 2,100 were surfaced; the rest were dirt. Prior to the establishment of the "Good Roads Campaign" in 1912, counties oversaw their own roads, meaning that there was no continuity between counties. Even during the time of the epidemic in 1918, the state's roads were still mostly a haphazard patchwork of roads to nowhere that often failed to connect from one county to another."[11] Some of these transportation woes were alleviated by the growth of the railroad system across North Carolina, which allowed for easier movement of both people and goods. By 1900, North Carolina had over 3,800 miles of railroads, crisscrossing almost every county within the state.[12] The burgeoning railroad system became crucial once the United States entered World War I and war materiel and soldiers needed to be transported in large amounts.

By the end of the war, North Carolina housed three military training camps (two active (Greene in Mecklenburg County and Polk in Wake) and one in construction (Bragg in Cumberland)), served as a transportation hub for thousands of American servicemen travelling to and from European fronts, and produced and shipped wartime textiles and armored materiel from factories throughout the state.[13] The state's workers gathered in large groups to produce Navy warships in Wilmington, airplane propellers in High Point, artillery shells in Raleigh, and Army-issued blankets, tents, and socks in textile mills in many towns and cities. At this time, North Carolina also experienced substandard public health, health care, and health practices, largely due to its

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[11] Walter Turner, *Paving Tobacco Road: A Century of Progress by the North Carolina Department of Transportation.* Raleigh: North Carolina Office of Archives and History, North Carolina Transportation Museum Foundation, 2003.
[12] "North Carolina – Railroads" http://www.carolana.com/NC/Transportation/railroads/home.html
[13] "World War I: North Carolina Digital History," http://www.learnnc.org/lp/editions/nchist-newcentury/3.0.

predominantly rural population.[14] The combination of insufficient and poor-quality health care resources and the increased transportation of war goods meant that North Carolina's citizens faced elevated risks during the 1918 epidemic as the disease swept largely unchecked throughout the state in a short time period.[15]

LITERATURE REVIEW

Many researchers trace the initial reports of the 1918 flu strain to Camp Funston in Kansas during spring of 1918 while others point to China, Japan, or France as the origin point.[16] However, the 1918 strain is often erroneously called the Spanish Flu. During the spring of 1918, many countries in Europe as well as the United States and Asia experienced a flu outbreak, but only Spain, still neutral in the midst of World War I, did not censor its news reports. Thus, Spain's flu outbreak became public knowledge, whereas other countries regarded news of the devastating disease as critical intelligence to be suppressed. Consequently, the flu became speciously branded as the "Spanish Influenza."[17] Whatever its origin, the influenza quickly spread throughout Asia, Europe, and North America in three distinct waves between 1918 and 1919.[18] The first wave

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[14] See William P. Brandon and Lauren A. Austin. "Chapter 13: W.S. Rankin and the Creation of Public Health in North Carolina, 1909-1925," in *North Carolina during the First World War*, Edited by Shepherd W. McKinley and Steven Sabol (Knoxville: University of Tennessee Press, 2018), forthcoming.
[15] David L. Cockrell, "'A Blessing in Disguise: The Influenza Epidemic of 1918 and North Carolina's Medical and Public Health Communities," *The North Carolina Historical Review* 73:3 (July 1996): 309-327.
[16] Alfred W. Crosby, *American's Forgotten Pandemic: The Influenza of 1918, Second Edition* (New York: Cambridge University Press), 19; Gina Kolata, *Flu: The Story of the Great Influenza Pandemic of 1918 and the Search for the Virus that Caused It* (New York: Farrar, Straus and Giroux, 1999), 9-11; Gerald F. Pyle, *The Diffusion of Influenza: Patterns and Paradigms* (New Jersey: Rowman & Littlefield), 40.
[17] Kolata, *"Flu,"* 10.
[18] Jeffrey K. Taubenberger and David M. Morens, "1918 Influenza: The Mother of all Pandemics." *Emerging Infectious Diseases* 12:1 (January 2006), 15-22.

struck during the spring and early summer of 1918, the second wave from September to November 1918, and the third wave in early 1919.[19]

Because typhoid fever and tuberculosis combined caused more than 2,200 deaths in North Carolina in the first nine months of 1918, the first wave of the influenza epidemic went largely unnoted.[20] It did not claim an abnormally high number of lives and people assumed it to be an older, rarely deadly form of the flu that doctors often called "la grippe."[21] This does not mean that the first wave was dissimilar from the second wave. E.R. LeCount, who performed autopsies during both the spring and fall waves, noted that, "We did not know at the time (in April 1918) what we had. The lungs were full of hemorrhages… It was not until the fall that we knew what we had, when we had cases duplicated."[22] Also noteworthy is the fact that in places that experienced both the spring and fall wave, almost all observers agreed that the victims of the first wave either escaped or experienced only mild illness in the fall.[23] Military doctors noted that troops who had been in a military camp during the spring wave had much lower rates of

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[19] Pyle, *The Diffusion*, 41; Taubenberger and Morens, "The Mother of all Pandemics," 15-22.
[20] The United States is no stranger to influenza epidemics. Outbreaks of the flu struck the U.S. in 1761-1762, 1767, 1781-1782, 1788-1789, 1830-1833, 1847-1848, 1850-1851, 1857-1858, 1873-1875, and 1889-1890. For more information on these epidemics see William Ian Beveridge, *Influenza: The Last Great Plague* (New York: Prodist, 1978), 29-30; C.W. Potter, "A History of Influenza," *Journal of Applied Microbiology* 91:4, 572-579; J.L. Taubenberger and D.M. Morens, "Pandemic Influenza: Including a Risk Assessment of H5N1," *Revue Scientifique et Technique* 28:1, 187-202. Current research suggests that the Native Americans potentially experienced an influenza epidemic in the late 1500s that greatly decimated their population; however, the exact origin and etiology of this disease cannot be confirmed after such passage of time. For more information on this theory, see Peter B. Mires, "Contact and Contagion: The Roanoke Colony and Influenza," *Society for Historical Archaeology* 28: 3 (1994): 30-38, p. 30.
[21] Cockrell, "Blessing," 309-327; Robert Mason, "Surviving the Blue Killer," *Virginia Quarterly Review* 74.2 (April 1998), 343; Harry McKown, "North Carolina and the 'Blue Death,'" http://www.learnnc.org/lp/editions/nchist-newcentury/4974; Sanders, "The Big Flu."
[22] E.R. LeCount, "The Pathologic Anatomy of Influenzal Bronchopneumonia," *Journal of American Medical Association* 72 (1919): 650-652; Ann H. Reid et al., "The 1918 Spanish Influenza: Integrating History and Biology," *Microbes and Infection* 3 (2001): 81-87, p. 82.
[23] E. Jordan, *Epidemic Influenza: A Survey* (Chicago: American Medical Association, 1927); Reid et al., "Integrating History and Biology," 82.

infection in the fall than did troops who arrived in the camps during the summer.[24] Patterson and Pyle discuss immunoprotection in the fall wave by stating that although contemporary serological studies are not possible, it seems probable that the strain prevalent in the spring was closely related to that of the fall. This means that those persons and regions attacked more aggressively in the spring generally suffered less in the fall.[25] While Patterson and Pyle concede that their theory cannot be proven with data, Reid et al. concur with them that both the historical record and observations from the time support the theory that exposure to the spring strain resulted in escape or a milder experience of the fall.[26]

North Carolina's second wave, which started in Wilmington in September 1918, garnered almost immediate attention.[27] Within a week of the first cases, so many residents of Wilmington found themselves afflicted that the James Walker Memorial Hospital overflowed with patients and officials had to open many temporary facilities.[28] This new strain of influenza, unlike previous flu epidemics, targeted the robust immune systems of the young and healthy (aged 20-39) as well as the very young, the elderly, and the already unhealthy whose elevated mortality is expected; the resulting W-shaped epidemic curve contrasted with the usual U-shaped age curve where the highest flu death rates are in children and the elderly.[29] There is no established scientific reason why this particular influenza strain targeted young adults between the ages of 20-39: that

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[24] Reid et al., "Integrating History and Biology," 82.
[25] K. David Patterson and Gerald F. Pyle. "The Geography and Mortality of the 1918 Influenza Epidemic," *Bulletin of the History of Medicine,* 65:1 (Spring 1991): 4-21, 4.
[26] Reid et al., "Integrating History and Biology," 82.
[27] Kolata, *Flu,"* 12-13.
[28] Cockrell, "Blessing," 311
[29] Pyle, *The Diffusion,* 40; Taubenberger and Morens, "The Mother of all Pandemics," 15-22.

demographic generally boasts strong immune systems. One theory put forth by Reid et al. is that the mutant flu strain that circulated in the fall of 1918 triggered an over-response in the healthy immune system, putting at high risk young adults aged 20-39 who should have been the most protected.[30] Taubenberger and Morens' alternative theory, which is based on 1900-1940 vital statistics of the United States, is that the 1918 flu strain was intrinsically less virulent in those born before 1889 because of exposure to a then-circulating virus capable of providing partial immunoprotection against the 1918 strain in adults over 35 years at the time of the fall outbreak.[31] Therefore, exposure to either the 1889 influenza strain or the spring 1918 strain could have provided some level of immunity during the deadlier fall wave and help explain why young adults were targeted so heavily during the fall.

In the second epidemic wave during the autumn of 1918, approximately 20% of the infected victims contracted a mild case and recovered without much problem. However, the other 80% of victims experienced one of two terrifying illnesses. Some victims almost immediately became deathly ill, their lungs quickly filling with fluid as they struggled to breathe. These victims died in a matter of days—sometimes even hours—with bodies ravaged by a high fever—and gasping for breath—until they lapsed into unconsciousness and then death. For the remainder of the victims, the illness initially presented as the ordinary flu complete with chills, fever, and muscle aches. However, by the fourth or fifth day of their illness pneumonia developed, filling their lungs with bacteria that either killed them or led to an exceptionally long period of convalescence.[32]

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[30] Reid et al., "Integrating History and Biology," 83.
[31] Taubenberger and Morens, "The Mother of all Pandemics," 19.
[32] Kolata, *"Flu," 12,* 303-305; Taubenberger and Morens, "The Mother of all Pandemics," 74.

The prevalence of blue-tinted skin among the victims caused observers to label this particular strain of influenza the "Blue Death."[33] There were also widespread reports of continued and persistent lethargy experienced by those who survived the flu. Many survivors, including President Woodrow Wilson,[34] experienced sluggish mental abilities, paranoia, and depression following their recovery from the flu.[35]

Epidemiological historians Reid, Taubenberger, and Fanning, as well as Kolata argue that the autumn wave is consistent with a virus that replicated to extremely high levels, quickly infecting epithelial cells through the respiratory system. The ability of this virus strain to cause damage deep in the lungs, specifically within the cells that lined the alveoli of the lungs, was unusually prevalent in 1918. This observation suggests a possible change in the autumn wave of the disease, specifically concerning the types of cells that the virus was able to infect and a consequential heightened robustness of the virus within the human body.[36] This heightened robustness of the virus in the autumn wave suggests that the virus's hemagglutinin protein either mutated in a way that allowed

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[33] Cockrell, "Blessing," 309-327; Mason, "Blue Killer," 343; Harry McKown, "North Carolina and the 'Blue Death'"; Sanders, "The Big Flu."

[34] President Wilson reportedly went into the WWI peace talks determined to fight for leniency for Germany, one of the few leaders who held this view. However, he came down with influenza on April 3, 1919. He insisted on returning to the talks on April 8th but with a marked change in personality. Members of his staff noted that his mind had lost its "resiliency," that he had lost the ability to grasp things quickly, suffered from short-term memory loss, and harbored obsessive paranoid thoughts. Without warning or consulting any other American in attendance, he suddenly agreed to the punitive demands against Germany, let Italy take whatever it wanted, and let Japan take over German concessions in China. Four months later, Wilson suffered a stroke from which he never recovered. Both Crosby and Barry argue that neurological complications of the flu caused a personality change in Wilson, which led to more punitive reparations being forced on Germany, which eventually led to the continuing international friction, German backlash, and other factors leading to World War II. For more information see, John M. Barry, *The Great Influenza: The Story of the Deadliest Pandemic in History* (New York: Viking Penguin, 2004). 384-386; Alfred W. Crosby, *American's Forgotten Pandemic: The Influenza of 1918, Second Edition* (New York: Cambridge University Press); Susan Kingsley Kent, *The Influenza Pandemic of 1918-1919: A Brief History with Documents*, (Boston: Bedford/St. Martin's), 20-22.

[35] Barry, *The Great Influenza:* 20-22; Elizabeth Outka, "'Wood for the Coffins Ran Out': Modernism and the Shadowed Afterlife of the Influenza Pandemic," *Modernism/modernity* 21.4 (November 2014), 942.

[36] Reid et al., "Integrating History and Biology," 82.

for improved ability to bind the virus receptors to human cells or gave the neuraminidase enzymes an improved ability to release budding viruses within the body.[37] Whatever the precise mechanism by which the autumn wave of the epidemic virus killed, the result was a deadly strain that often caused the quick onset of pneumonia and consequential failure of the lungs in victims.

The 1918 epidemic gave rise to several claims about who was most affected by this influenza strain. One of the principal perceptions regarding race is based on the belief of the black public, black physicians, and white public health officials in 1918 that African-Americans fared better during the epidemic than did whites.[38] Alfred Crosby argues that the African-American population experienced higher than average levels of flu during the initial less-deadly wave of influenza in the spring of 1918, due to greater susceptibility arising from their great poverty, segregation in all aspects of their life, and lack of access to medical care. Crosby asserts that this initial surge of spring flu cases within the African-American community may have provided those who were infected in the spring with some degree of immunity, for when the flu strain mutated into the more deadly strain that struck in fall 1918, those African-Americans who had been ill in the spring were now largely immune.[39] However, Crosby's hypothesis relies heavily on the problematic 1920 findings of Dr. W.H. Frost of the United States Public Health Service.

Dr. W.H. Frost reported in 1920 that in seven localities with substantial black populations, their incidence rate of influenza among blacks was lower than that of white people even after adjusting for sex and age. In Spartanburg, South Carolina, Frost

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[37] Kolata, *Flu,"*215-218; Reid et al., "Integrating History and Biology," 82.
[38] Vanessa Northington Gamble, "'There Wasn't a Lot of Comfort in Those Days:' African Americans, Public Health, and the 1918 Influenza Epidemic." *Public Health Reports* 125.Suppl 3(2010): 114-122.
[39] Crosby, *Pandemic*, 229.

collected data that showed that whites experienced 224 cases per 1,000 while blacks experienced 173 cases per 1,000. Data gathered from Augusta, Little Rock, Baltimore, Macon, and Louisville supported the findings in Spartanburg. Frost concluded that this incidence rate was "quite contrary to what would have been expected," given the documented increased death rates among blacks from typical strains of pneumonia and influenza and "that the colored population live generally under conditions presumably more favorable to the spread of contact infections."[40] However, it is important to note that Frost's data was obtained from interviews conducted by inspectors in the homes of residents of those cities rather than from medical records.[41]

In her 2010 work on the black community during the epidemic, Vanessa Northington Gamble provides more anecdotal evidence that blacks were perceived at the time of the epidemic to be less susceptible and therefore to experience lower mortality rates. She cites letters written from schoolchildren, memoires of those who lived through the epidemic, and newspaper coverage of the epidemic by black newspapers to support the claim that blacks experienced lower flu mortality than did whites. However, she notes that the black newspapers often intentionally downplayed various problems that affected the white community in order to differentiate the black community from that of whites and encourage cohesiveness among blacks; this trend could have been used to discuss the flu both in black newspapers and within black communities.[42] Consequently, while the black community is often hypothesized to have suffered lower mortality during the deadly fall surge, those beliefs are mainly based on non-quantitative findings.

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[40] W.H. Frost, "Statistics of Influenza Mortality," *1920 Public Health Report* 35:11 (March 12, 1920): 579-597, p. 591-592; Gamble, "Comfort," 114-122.
[41] Frost, "Statistics of Influenza Mortality," 584.
[42] Gamble, "Comfort," 114-122.

Another common belief about the 1918 epidemic is that the flu spread the fastest along major transportation routes. Scholars such as Cockrell, Oxford, Sefton, Jackson, Innes, Daniels, and Johnson agree that the 1918 influenza strain spread so quickly because it struck exactly when WWI caused large-scale movements of people to and from all corners of the globe.[43] Mobilization for war necessitated near constant movement of people and goods both within the U.S. and internationally. Military training camps in particular were centers of ever-changing populations and North Carolina was home to three military training camps during WWI—Camp Greene near Charlotte, Camp Bragg near Fayetteville, and Camp Polk near Raleigh (although Camp Bragg did not officially open until 1919).[44] Altogether, 86,457 soldiers trained in these three camps before serving overseas.[45] Not surprisingly, the influenza strain reportedly hit soldiers stationed at the camp particularly hard, due to their crowded living quarters and the camps' less than desirable sanitary conditions.[46] During the outbreak of 1918, observers noted that coffins of soldiers who contracted and succumbed to the flu filled the railroad station serving Camp Greene from floor to ceiling.[47]

Manufacturing centers, where the population typically endured overcrowded living quarters, and crowded work environments,[48] were also thought to encourage the rapid spread of the flu virus. Within North Carolina, Alamance, Cabarrus, Durham,

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[43] Cockrell, "Blessing," 310; JS Oxford et al, "Word War I May Have Allowed the Emergence of 'Spanish' Influenza," *The Lancet: Infectious Diseases* 2: 111-114, p. 114.
[44] Matthew Shaeffer, "Fort Bragg: North Carolina History Project," http://northcarolinahistory.org/encyclopedia/fort-bragg/.
[45] "World War I: North Carolina Digital History," http://www.learnnc.org/lp/editions/nchist-newcentury/3.0.
[46] Burroughs, *"Camp Greene,"* 3-4; Carol R. Byerly, *Fever of War: The Influenza Epidemic in the U.S. Army during World War I* (New York: New York University Press), 160-162.
[47] Harry McKown, "North Carolina and the 'Blue Death'"
[48] Cox, "Towels, Socks, and Denim," forthcoming.

Gaston, and Guilford Counties were important centers of cotton textile manufacturing at this time, and New Hanover, Guilford, and Wake were centers of war materiel industries. In the view of contemporaries such as Stewart Warren Cramer,[49] their mills and factories seemed especially susceptible to the spread of contagious and infectious diseases.[50] Thus, the North Carolina Board of Health mandated the closure of numerous mills and factories during the height of the epidemic.[51] If the supposition of the Board of Health was correct concerning the dangerous nature of the mills, then at least in the beginning of the epidemic, before the mill closure took effect, those counties that served as centers of manufacturing and industry should evince higher levels of flu mortality than other counties within North Carolina.

It seems surprising that the 1918-1919 influenza, an epidemic which was so pervasive that it killed an estimated 20 to 100 million individuals worldwide[52] and infected as much as one-half of the global population,[53] did not evoke comprehensive detailed records of how many people died in the United States and aggregate demographics describing the victims. This information void was due in large part to the underdeveloped institutionalism of local public health departments at the time. Some cities, such as Chicago and Philadelphia,[54] kept better records than most; however, the

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[49] Letter from Mr. Stewart Warren Cramer to the Honorable Daniel G. Roper, October 19, 1918. Claude Kitchin Papers, #406, Folder 474, Southern Historical Collection, The Wilson Library, University of North Carolina at Chapel Hill.
[50] Cox, "Towels, Socks, and Denim," forthcoming.
[51] Letter from Mr. Stewart Warren Cramer to the Honorable Daniel G. Roper, October 19, 1918. Claude Kitchin Papers, #406, Folder 474.
[52] Kolata, *Flu,"*7; Peter Tuckel, Sharon Sassler, Richard Maisel, and Andrew Leykam. "The Diffusion of the Influenza Pandemic of 1918 in Hartford, Connecticut," *Social Science History* 30:2 (Summer 2006), 167-96, p. 167.
[53] Alfred W. Crosby, *Epidemic and Peace, 1918.* Westport, CT: Greenwood Press, 1976.
[54] A.A. Hoehling, *The Great Epidemic* (Boston: Little, Brown and Company, 1961); Gina Kolata, *Flu: The Story of the Great Influenza Pandemic of 1918 and the Search for the Virus that Caused It* (New York: Farrar, Straus and Giroux, 1999), 19.

majority of the cities in the United States were so overwhelmed by the rapidity and high mortality of the epidemic that any sporadic records that were kept are likely to be incomplete.[55] In fact, this shortcoming was prevalent worldwide due to incompleteness of reporting, lack of accurate diagnosis, and difficulties in assigning the cause of death as influenza when that disease was so often accompanied by fatal pneumonia.[56]

The North Carolina State Board of Health reported that a total of 13,703 died in North Carolina from influenza between October 1, 1918 and March 1, 1919: it reported 6,561 influenza deaths in October, 2,083 in November, 1,920 in December, 2,266 in January, and 873 in February.[57] However, this number is gleaned from the available spotty information reported at the time, not from extensive medical records and analysis.[58] The national *Public Health Report* from December 20, 1918 noted that the Public Health Service's counts of disease incidence were obtained from non-obligatory telegraphic summaries from State health officers throughout the United States.[59] There was no mandatory reporting of disease at the time and the frantic nature of responses to the outbreak meant that in many cases doctors and local health officials were too busy treating the disease to find time to report numbers of cases or deaths. Therefore, the

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[55] Patterson and Pyle, "Geography and Mortality," 4.

[56] In many cases, the influenza strain resulted in the quick inset of fatal pneumonia, so the cause of death was often attributed to the secondary onset of pneumonia rather than the initial attack of influenza. Kolata, *"Flu," 12,* 303-305; Taubenberger and Morens, "The Mother of all Pandemics," 74; Patterson and Pyle, "Geography and Mortality," 4.

[57] W.S. Rankin, "Annual Report of the North Carolina State Board of Health, 1919." Raleigh: Edward & Broughton Printing Company, 1919, p. 350.

[58] Some scholars use different mortality numbers for North Carolina's flu dead during the epidemic. In his well-known and oft-cited work, "'A Blessing in Disguise: The Influenza Epidemic of 1918 and North Carolina's Medical and Public Health Communities," *The North Carolina Historical Review* 73:3 (July 1996): 309-327, David L. Cockrell states that North Carolina lost 13,644 of its citizens to influenza during the 1918 epidemic but unfortunately does not provide a citation for that statistic.

[59] United States Department of Health, "Epidemic Influenza: Prevalence in the United States," *Public Health Reports* 33:51 (December 20, 1918): 2257-2304, p. 2257.

calculated number of 13,703 not only left out the months of September and March, but also relied solely on non-mandatory reporting.

No comprehensive breakdown of mortality statistics exists for North Carolina during the period of the epidemic. There is no list of county statistics, no detailed age, sex, or race data for influenza victims. The only partial breakdown found is that of the *1918 Mortality Statistics* published in 1920 by the Bureau of the Census. This report shows a national influenza mortality rate of 298.9 per 100,000 and a North Carolina total rate of 325.4 per 100,000. The report also breaks down the North Carolina death rate by race, reporting 285.9 per 100,000 for whites and 412.6 per 100,000 for colored.[60] However, even this report notes that the estimates are based on "arithmetic method" and that the population estimates are probably far too high because the author used the last Census, 1910, to derive the denominators, thereby distorting the 1918 population.[61] Consequently, while North Carolina officials produced the best influenza mortality data that they could find, given the panic that the epidemic initially provoked, the need for a more comprehensive and accurate mortality database is evident. The aim of this article is to create just such a database and use it to analyze at both the county and individual level how many North Carolina residents died during select months of the 1918 epidemic. This dataset will allow the investigator to determine if North Carolina's experience of the epidemic differed from the reported national experience.

Accepting the figure of 13,703 deaths reported by the North Carolina Board of Public Health (October 1, 1918 to February 28, 1919) and using the 1920 state population

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[60] Sam L. Rogers, "Department of Commerce, Bureau of the Census: Mortality Statistics, 1918." (Washington, D.C.: Government Printing Office, 1920), 34.
[61] Ibid.

of 2,561,959[62] it can be estimated that 0.5% of the North Carolina population died from influenza during the primary epidemic months. This death rate appears to be lower than the global average generally reported: conservative global estimates suggest that approximately one-third of the world's population was infected and case-fatality rates were greater than 2.5%, compared to less than 0.1% in more normal influenza epidemics.[63] Based on these expectations and the population of North Carolina during the epidemic, the expected number of infected individuals should have been approximately 853,041 and the expected number of fatalities from infection should have been approximately 21,326 based on the 2.5% case-fatality rate.

In contrast, medical historians/epidemiologists David Patterson and Gerald Pyle have reported that the United States experienced a mortality rate of 5.2 per 1,000 during the epidemic based on 1920 census returns, United Nations estimates, and mortality statistics taken either from the estimations of other scholars or their own estimates.[64] Based on the proportion suggested by Patterson and Pyle, North Carolina's expected crude mortality during the epidemic would be approximately 13,307 individuals. This number is much closer to the 13,703 deaths reported for North Carolina during the

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[62] United States Census Bureau, 1920. The 1920 Census was enumerated on January 1, 1920 and therefore provides a total population number close to that of North Carolina in March 1919, the end of the studied period.

[63] While the worldwide mortality average was between 2.5-5%, certain places experienced extremely elevated mortality rates. In both Alaska and Labrador mortality was substantially higher, reaching as high as 38% at the regional level Alaska and 75% at the regional level in Labrador. Some local communities experienced a 90% mortality rate during the epidemic. The high mortality in these areas is attributed to weather, geography, health care accessibility, quarantine policies, nutritional deficiencies, cultural factors, and lack of exposure to previous outbreaks of influenza or other diseases. Svenn-Erik Mamelund, Lisa Sattenspiel, and Jessica Dimka, "Influenza-Associated Mortality during the 1918-1919 Influenza Pandemic in Alaska and Labrador: A Comparison," *Social Science History* (Summer 2013) 37:2, 177-229; Gina Kolata, *Flu: The Story of the Great Influenza Pandemic of 1918 and the Search for the Virus that Caused It* (New York: Farrar, Straus and Giroux, 1999), 10; Jeffrey K. Taubenberger and David M. Morens, "The Mother of All Pandemics," 15.

[64] Patterson and Pyle, "Geography and Mortality," 15.

epidemic and suggests that North Carolina's experience during the epidemic (October 1918 – February 1919) did not differ significantly from that of the rest of the nation. However, given North Carolina's inaccurate and unreliable reporting system and the well-known fallacy of generalizing aggregate means to subunits, it must be acknowledged that currently the mortality of the 1918-1919 pandemic in North Carolina is unknown. The database assembled for this study based on careful intentional sampling shows that these figures surely underestimate North Carolina mortality, especially if March 1919, the last epidemic month, is included.

This consensus regarding the 1918-1919 flu epidemic in America is largely based on observation of a limited range of experience and anecdote. The devastating impacts of the epidemic on remote villages in Alaska and Canada, for example, have been well-chronicled,[65] but the general experience of populations that commonly suffer health and health care disparities in the lower forty-eight states have not received systematic attention. A number of testable propositions are contained in the secondary literature and firsthand accounts discussed in the literature review. Careful analysis of a newly constructed dataset will allow these empirical claims to be tested for the first time using a statewide database.

RESEARCH QUESTIONS

A new dataset developed specifically for this policy history of North Carolina's experience of the 1918-19 flu epidemic permits the testing of the conventional wisdom discussed in the literature review. Among the commonly held beliefs that can now be

[65] For a description of the epidemic in Alaskan villages, see: Kolata, "Flu," 31-33.

tested is the conviction that the particular strain of influenza circulating in 1918-19 disproportionately affected men rather than women, populations living in areas with large concentrations of vulnerable individuals (namely military training camps and manufacturing centers), and certain races and ages that were not generally so susceptible to ordinary flu viruses.

Three distinct kinds of investigation were undertaken. The first set of research questions[66] pertains to the geographical diffusion of influenza across North Carolina's counties and regions during the seven months of the epidemic:

1) Did the flu spread along the railroad lines from Wilmington?
2) Did the flu spread differentially over North Carolina, with areas hard hit in October experiencing lower mortality in March?
3) Did areas with large concentrations of vulnerable individuals (military training camps, manufacturing centers) suffer disproportionately greater mortality?

The second set of research questions pertains to the individual level of analysis, mainly the demographic characteristics of North Carolinians who were more likely to die of flu, die of some other cause, or live during the epidemic:

4) For North Carolina as a whole, were young adults more likely to die of the flu than those of other ages?
5) Were men more likely to die of the flu overall out of the whole North Carolina population?
6) Were blacks more or less likely to die of the flu overall out of the whole North Carolina population?

[66] A partial preliminary analysis of the data used to examine this first set of questions is forthcoming in Austin and Brandon, "Pandemic and War," forthcoming.

7) (a) Were single adult individuals more likely to die of the flu overall out of the whole North Carolina population? (b) Did being married provide some sort of buffer from dying of the flu?

8) Were those born in North Carolina versus those born outside of North Carolina more likely to die of the flu overall out of the whole North Carolina population?

The third set of research questions pertains healthcare received by those who died of flu and those who died of some other cause:

9) Did minorities receive fewer days of healthcare treatment than did whites during the epidemic?

10) Did single adult individuals (never married, widowed, divorced) receive fewer days of treatment than those who were married?

11) Did minorities experience more days of non-treatment before death from the flu than did whites?

METHODOLOGY

Answering those detailed research questions required a rich database. Preliminary investigation revealed that no existing source could provide mortality rates for North Carolina and its 100 counties. The state death totals discussed in the literature review were largely unsourced and unexplained and cannot be disaggregated to generate empirical data about which specific populations were most at risk. The only comprehensive statewide source of records that detail who died in 1918 and 1919 and the cause of death is the file containing individual death certificates, which were intended to be completed by a physician but were sometimes completed by the coroner if the attending physician was unavailable to complete the certificate.[67] Therefore, the author

[67] North Carolina Death Certificates, October 1918 and March 1919, www.ancestry.com

examined and coded every North Carolina death certificate—flu and non-flu—for two sample months during the seven-month epidemic. The sample months, October 1918 at height of the epidemic and March 1919, the last month, when flu mortality was much lower, were chosen for their contrast in incidence of flu and flu mortality, as well as to provide two points in time that would facilitate observation of the spread of flu through the state.

Death certificates, when filled in completely, are information-rich documents that provide considerable demographic, geographic and physician access or treatment data, as well as primary and secondary cause of death. Because those who did not die of flu or some other cause remained alive, the data also permitted the investigator to calculate the relative probability of living rather than succumbing to the flu or some other cause. Because each death certificate described an individual death, the unit of analysis in this investigation was the individual, with the cause of death--deaths from flu or other causes or living--serving as the dependent variable. Another set of research questions involved differences in health care interventions or what some have today called "realized access"[68]; such investigations using interactions between physicians and individuals before the latter's death as the dependent variable also involved the individual as the unit of analysis. However, death certificates also lend themselves to a third kind of question, which required analyses using the county where the individual died as the unit of analysis. Because of the great variation among North Carolina's 100 counties in the early

[68] Ronald M. Andersen, "Revisiting the Behavioral Model and Access to Medical Care: Does it Matter?" *Journal of Health and Social Behavior* 36:1 (March 1995): 4; Greg Greenberg, William P. Brandon, Nancy Schoeps, Lynne R. Tingle and Laure D. Shull, "Medicaid Managed Care and Racial Differences in Satisfaction and Access," *Journal of Health Care for the Poor and Underserved* 14:3 (August 2003): 351-371.

1900s, valid comparisons of the populations dying in those counties required calculating standardized mortality rates (i.e., age-, sex-, race-adjusted mortality) for each county in each of the two months. (The explanation of standardized mortality rates is provided below in the subsection "data.") The three kinds of questions required different analytic approaches that will be explained later in an "analysis" subsection.

The calculation of mortality rates also requires knowledge of the population at risk of death. Those data were provided by the 1920 Census, which fortuitously was conducted on January 1, 1920, thereby minimizing the time between December 31, 1919 and the sample months of October 1918 and March 1919 (16 months and 10 months, respectively). Obviously, some assumptions about the stability of North Carolina county populations were required in order to calculate mortality rates and conduct some of the regression analyses. The "analysis" subsection below discusses those assumptions.[69] The demographic data in the Census and the death certificates involved the same measurement units and categories. In order to calculate standardized mortality rates and to facilitate some of the analyses certain variables were converted from continuous variables into interval data. For example, both Census and death certificate ages were grouped into six intervals.

Unfortunately, infectious disease reporting in the World War I era was even worse than it is today; therefore, no independent estimates of morbidity can be incorporated into this study. The literature on the 1918-1919 flu epidemic does contain some national estimates for flu morbidity—or "attack rates"—and these figures could be

[69] For precedent on the accepted use of 1920 Census data to provide population parameters for the 1918 influenza epidemic, see K. David Patterson and Gerald F. Pyle, "Geography and Mortality of the 1918 Influenza Epidemic" *Bulletin of the History of Medicine,* Vol. 65, No. 1 (Spring 1991), pp. 4-21.

applied to census data for the North Carolina population to estimate the number of those who became ill. However, there is little reason to assume that national morbidity rates, even if shown to be correct for the entire nation, accurately reflect the attack rates in North Carolina. In any case, this study will be most productive if it rigorously and completely analyzes its extensive and well-documented mortality database.

Data

The new dataset created for this dissertation was derived from the death certificates of individuals who died in North Carolina and supplemented with population data from the 1920 Census.[70] The death certificates are on microfilm rolls at the North Carolina State Archives in Raleigh, NC and were accessed online via www.ancestry.com. The microfilm rolls were organized by Ancestry.com so that the death certificates for each county could be accessed by any time period and browsed sequentially. The month that included the height of the epidemic in North Carolina (October 1918) and the month that represented the conclusion of the epidemic (March 1919) best represent the epidemiological course for the entire epidemic. The use of October 1918 and March 1919 will also presumably best register whether the counties hardest hit at the beginning of the epidemic had populations that were somewhat immunized against the flu in March 1919 to a greater extent than other counties. Therefore, all death certificates on file in the North Carolina State Archives for October 1918 (N = 8,892) and March 1919 (N = 2,944) were coded and comprise the new data used in this dissertation (N = 11,836).

[70] For precedent on the accepted use of this data source in historical analysis, see Peter Tuckel, Sharon Sassler, Richard Maisel, and Andrew Leykam. "The Diffusion of the Influenza Pandemic of 1918 in Hartford, Connecticut," *Social Science History* 30:2 (Summer 2006), 167-96. This article was the first to utilize the combination of death certificates and GIS mapping technology to examine the spread of the disease.

The death certificate form used by doctors during the time of the epidemic included demographic information about the deceased in addition to both the primary and secondary cause of death for the individual, along with some information regarding length of treatment. The information pulled from each death certificate for use in this dissertation and codes assigned, when coded, are as follows: state certificate number, county name, township name, town name, city name, age, sex (0 = female, 1 = male), race (0 = white, 1 = black, 2 = other), marital status (0 = never married, 1 = married, 2 = widowed, 3 = divorced), date of birth, age, occupation, birthplace, whether parents are foreign born (0 = no, 1 = father foreign born, 2 = mother foreign born, 3 = both parents foreign born), date of death, date first seen by doctor, date last seen by doctor, primary cause of death, whether the first cause of death was flu (0 = no, 1 = yes), secondary cause of death, and whether the second case of death was flu (0 = no, 1 = yes).[71]

Several additional variables were created using the original information provided on the death certificates. The variable "flu" was created by combining both the primary and secondary causes of death into one variable that indicates whether a doctor noted the individual to have died of the flu (0 = no, 1 = yes). The variable "Days_Treatment" was calculated by subtracting the date the individual was last seen by the doctor from the date the doctor first saw the patient to determine the total number of days of treatment the individual received. In cases in which the doctor only saw the patient on the day of their

[71] Because pneumonia was often a sequela of flu and often the immediate cause of death, the author coded pneumonia as a cause of death, thinking that it might serve as a proxy for influenza. However, the number of death certificates that contained pneumonia as one of the causes of death without influenza listed as the other was relatively small, 310 in October 1918 and 143 in March 1919. By March 1919 when the usual pattern of a higher proportion of elderly deaths began to reassert itself, it was unclear whether the pneumonia deaths unaccompanied by flu as a cause might not be pneumonia reverting to its traditional role as "the old man's friend." Consequently, pneumonia by itself as a cause of death was treated in the analysis as a "non-flu" death.

death, the total number of treatment days was recorded as 0. In cases where no doctor ever visited the patient, the total number of treatment days was recorded as missing data. The variable "Last_Visit_to_Death" was calculated by subtracting the individual's date of death from the date that the doctor last saw the patient to determine how many days passed between the last instance of medical treatment and the date of death. For this variable as well, the value was only recorded as missing if the patient never had a doctor in attendance at all during their sickness. The variable "Birthplace_Recoded" notes whether the individual's place of birth noted on the death certificate was either within North Carolina (=0), within another state within the United States (=1), or a country outside of the United States (=2). The age variable was recoded into six separate age intervals to permit its use as a dummy variable in regression models: "Age_Group=0" (0-1), "Age_Group=1" (2-9), "Age_Group=2" (10-19), "Age_Group=3" (20-39), "Age_Group=4" (40-59), and "Age_Group=5" (60 and older), so that each individual is coded 1 = yes for their respective age group and 0 = no for all others.

Additionally, a variable called "Marital_Status" was created by combining the marital status variable into a dummy variable in which never married/widowed/divorced individuals were all coded 0 = single and the married individuals remained 1 = married. This conversion reflects the assumption that widowed and divorced individuals largely live in the same manner as those who have never married and therefore share similar characteristics when compared. The "race" variable was recoded to contain only white (=0) and black (=1) individuals because all other races constituted a miniscule portion of the population (0.05%). All other races were excluded from all analyses. Another dummy variable named "oct" was created to control for the presence of two months' worth of

data in the data set. Those who died in October 1918 were coded (=1) and those who died in March 1919 were coded (=0). The author decided to use a control variable instead of fixed effects. Fixed effects are models mainly utilized in panel data to account for the same case being observed across numerous observation points,[72] whereas in this dataset the cases for October and March are entirely separate because that those who died in October obviously were not again observed as deaths in March.[73]

The variable "City_NonCity" was created to denote whether the individual died in one of the five largest cities in North Carolina at the time of the epidemic. According to the 1920 Census, there were four cities with 25,000 or more inhabitants: Asheville (28,504), Charlotte (46,338), Wilmington (33,372), and Winston-Salem (48,395). The population of Raleigh in 1920 was 24,418[74] so Raleigh was included in the list of the top five cities in North Carolina during the period of the epidemic.[75] The dummy county variable "Contained_TopCity" also used these same five cities in order to identify those counties that contained one of them (Buncombe, Mecklenburg, New Hanover, Forsyth, and Wake, respectively).

Necessary additional data was obtained by accessing the complete 1920 United States Census from www.usa.ipums.org. All census data for the state of North Carolina (N = 2,561,959) was downloaded to generate necessary denominators defining the

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[72] Andrew Bell and Kelvyn Jones, "Explaining Fixed Effects: Random Effects Modeling of Time-Series Cross-Sectional and Panel Data." *Political Science Research and Methods* 3:1 (January 2015), 133-153.
[73] See Appendix A for a list of population frequencies for October 1918, March 1919, and the 1920 Census data.
[74] City of Raleigh Department of City Planning; U.S. Census Bureau; CAMPO. file:///C:/Users/Owner/AppData/Local/Temp/PopulationAndCitySize.pdf
[75] To emphasize a point made at the beginning of this article, the reader will note the striking contrast between North Carolina's small towns and a northern state like New York, which had six cities with more than 100,000 inhabitants led by New York City with its 5.6 million in 1920.

population at risk in calculating mortality rates, to provide values for some of the independent variables, to assist in the creation of dummy variables, to assist in calculating crude mortality rates for influenza and other causes of death, and to serve as the reference group in the individual-level analyses. Because the 1920 Census had an enumeration date of January 1, 1920,[76] the population recorded at this time closely matches the population living in North Carolina during the 1918-1919 influenza epidemic.[77] Although ideally the denominator for mortality rates is the population at risk of death at the beginning of the time period observed, this standard is very hard to achieve in practice. Previous population studies demonstrate the utility of using the most appropriate U.S. Census.[78] The 1920 Census provides the only accurate source of population data for North Carolina in this era; its accuracy at the county level makes it an invaluable data source. Some consideration was given to adjusting the ages and editing by age, sex, and race to count those who died in the sample months as part of the vulnerable population. However, the complexity of this task and the fact that no adjustment could be made for deaths falling outside of the two sample months dictated that the data be used as it was reported in the Census files. The decision to use the 1920 Census is sound if the population on North Carolina did not undergo major changes in the 16 and 10 months before the enumeration. One major change did occur during that period: World War I ended on November 11, 1918. Demobilization took some time, but large numbers of former soldiers undoubtedly returned to North Carolina during 1919

[76] United States Census Bureau, History: 1920 Overview. https://www.census.gov/history/www/through_the_decades/overview/1920.html
[77] Patterson and Pyle, "Geography and Mortality," 4-21.
[78] For more information see Almond, Douglas, "Is the 1918 Influenza Pandemic Over? Long-Term Effects of *In Utero* Influenza Exposure in the Post-1940 U.S. Population." *Journal of Political Economy* 114:4, 67-712; Patterson and Pyle, "Geography and Mortality," 4-21; Tuckel *et al*. "The Diffusion," 167-96.

and were included in the 1920 Census. Because of conscription, it is reasonable to assume that the returnees were distributed throughout the state. The author is aware of only one major local population shift in North Carolina during the relevant period. Camp Greene, which had been a busy training camp containing some 27,000 thousand soldiers was abandoned by the end of summer 1919.[79] The other two army camps in North Carolina did not have large numbers of troops; indeed, Fort Bragg did not become operational during the period covered in this study. The anecdotal evidence that Camp Greene was the scene of many deaths is very compelling; [80]the death certificates in October 1918 alone record the deaths of 253 soldiers at Camp Greene and none in March 1919. In order to ensure that the analyses in this study are not distorted by the reduction in the number of males in Mecklenburg population between October 1, 1917 and January 1, 1920, a sensitivity analysis was conducted by running the individual-level population regression models a second time without including Mecklenburg. This procedure allowed the researcher to determine whether the presumed change in the denominator changes any of the findings (which are statewide averages).

The variable "Population_Density" was created to register the differences in population density across the counties of North Carolina. The population density data for each county was obtained from the "Abstract of the Fourteenth Census of the United States, 1920" which provides county's population per square mile.[81] The variable

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[79] Kurt Geske, "Where Johnnie Got His Gun: Charlotte and Camp Greene," in *North Carolina during the First World War,* Edited by Shepherd W. McKinley and Steven Sabol (Knoxville: University of Tennessee Press, 2018), forthcoming.
[80] See Appendix B for sensitivity analysis.
[81] Department of Commerce, Bureau of the Census, "Abstract of the Fourteenth Census of the United States, 1920, Table 9: Area and Population of Counties, 1920," Washington, DC: Government Printing Office, 1923. pg. 39

"region" was also created to control for the differences in region across the counties of North Carolina. Each county was coded according to its regional location (Mountains = 1, Piedmont = 2, Coastal Plain = 3, Tidewater = 4). The regional assignment of each county was obtained from Stuart and Orr's "The North Carolina Atlas: Portrait for a New Century."[82] Finally, the dummy variable "Industry_Textile_Center was created by coding as 1 those counties previously identified as centers for wartime or textile manufacturing (Alamance, Cabarrus, Durham, Gaston, Guilford, New Hanover, and Wake) and 0 for all other counties.[83]

Analysis

Several different analytical techniques must be used to fully explore this rich dataset. The initial analysis of the population-level county data used maps generated by geographical information systems (GIS) software to provide a spatial dimension to the ranking of county standardized flu mortality rates. The second step in this analysis called for ordinary least squares (OLS) regression to determine which county-level characteristics are associated with the standardized mortality rates. The individual level analysis involved in determining the relative probability of living, dying of the flu, or dying of some other cause required a multinomial regression model, due to the three possible values of the dependent variable. Finally, the analyses using access to care as the dependent variable involve a continuous variable (time) and can therefore best be examined using OLS. None of the regression models involve fixed effects. As with all regression analyses, missing observations containing missing variables are dropped from

[82] Alfred Stuart and Douglas M. Orr, eds., *The North Carolina Atlas: Portrait for a New Century* (Chapel Hill: University of North Carolina Press, 2000).
[83] Cox, "Towels, Socks, and Denim," forthcoming.

the model.[84] By undertaking separate analyses into population and individual levels, the study avoided the intricacies of multi-level regression. Throughout the analysis the conventional 0.05 level of statistical significance defined the threshold for meaningful association, although 0.01 and 0.001 significance levels were also reported if they occurred. The 0.05 level of statistical significance means that 1 in 20 times the association between the variables could happen by chance. The remaining 19 times indicate a genuine association between the variables. The p-value can also be seen as the percent chance that the researcher is wrong in rejecting the null hypothesis of no relationship between the variables. A p-value of 0.05 indicates a 5% chance that the researcher is incorrect, 0.01 indicates a one out of one hundred chance of a mistake, and 0.001 indicates the probability that one out of one thousand trials will produce this outcome by chance. The lower the p-value, the less likely the relationship between the variables is due to chance.

County-Level Analysis. The analysis of the county level population hypotheses involved presenting data for the months of October and March in a form that allowed valid comparisons of flu mortality among 100 counties with very different population structures. Because crude death rates (flu-caused deaths for a given period divided by total population at risk) are notoriously misleading when populations differ in demographic characteristics such as age, sex, and race, it was necessary to standardize mortality data for all 100 counties. Standardization, or age-, sex-, race-adjustment was accomplished using the direct method applied to county populations reported in the 1920

[84] See Appendix C for frequencies of missing data by variable.

census.[85] The 1920 state population was the standard population used to compute age, sex, and race adjustments for each county.[86] No adjustment was made in the analysis of statewide data.

In order to answer the research questions pertaining to the diffusion of influenza across North Carolina in 1918, the standardized mortality rates of each county for both October and March were collected and then mapped in quintiles using ArcGIS. The software generated two maps showing relative county mortality in five colors for October 1918 and March 1919. To determine regions of very high and very low mortality in each month, the threshold of a deviance of above or below the standard deviation from the mean for each quintile was utilized, thereby generating a unique above/below threshold specific to each quintile. The standard deviation of the mean for each quintile was obtained by running a one-sample t-test for each quintile. Thus, counties falling below or above the calculated standard deviation for their quintile were considered highly or lightly impacted counties.

An OLS regression was also carried out using the county population level data to determine any county characteristic in North Carolina that showed statistical significance in its association with the dependent variable, the standardized county mortality rate. The SPSS statistical package was used to conduct this analysis. Separate analyses were run for October and March using the specific month's standardized county mortality rate as

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[85] For an explanation of the direct method of adjustment, see Thomas D. Koepsell and Noel S. Weiss, *Epidemiologic Methods: Studying the Occurrence of Illness,* (Oxford: Oxford University Press, 2003), 247-252.

[86] The exception to this adjustment using all three demographic parameters was Graham County in the western mountains. At the time of the epidemic, Graham County contained such a low number of black citizens (4 total) that standardizing for race caused the death rates for Blacks to be extremely inflated. In order to correct for this inflation and obtain a truer understanding of flu mortality in that county, the population of Graham County was adjusted only by age and sex.

the dependent variable. The independent variables were population density, percent black, region, whether the county contained one of the five largest cities at the time, and whether the county was considered a manufacturing or industrial center. The 1920 population density and percent black were generated from the 1920 United States Census.[87] The remaining three independent variables (region, manufacturing/industrial center, and top five largest cities) were created variables.

Individual-Level Analysis. To answer the first set of individual-level research questions, a multinomial logistic regression model was run on a stacked dataset consisting of the 11,836 death certificates coded from the Ancestry.com for the months of October 1918 and March 1919 as well as the 2,561,959 individuals reported on the 1920 U.S. Census for North Carolina (total N = 2,573,795).[88] A multinomial logistic regression was chosen in order to allow for a dependent variable, "flu," with three outcomes so that those who died during the research period from the flu (flu=1), those who died of a cause other than the flu (flu=0), and those who didn't die during the span of the epidemic (flu=2) could be analyzed together. This research strategy provided a more comprehensive understanding by including not only those who were more likely to die of influenza during the epidemic but also those who were more likely to die of other causes and comparing those groups with the remainder of the state population that lived through the sample months. This analysis was carried out using the SPSS statistical package. The dependent variable was the "flu" variable and the following independent variables were recoded: age ("Age_Group=0" (0-1), "Age_Group=1" (2-9), "Age_Group=2" (10-19),

[87] United States Census, 1920.
[88] Ancestry, www.ancestry.com; United States Census, 1920.

"Age_Group=3" (20-39), "Age_Group=4" (40-59), and "Age_Group=5" (60 and older)), marital status (never married/widowed/divorced individuals were all coded 0 = single and the married individuals remained 1 = married), race (white=0, black=1), sex (female=0, male=1), and Birthplace_Recoded (born in NC=0, born in another state=1, born in another country=2).

To answer the third set of research questions, those pertaining to the treatment received by individuals during the epidemic, OLS regression models were used. OLS was most appropriate for these research questions because both dependent variables, "Days_Treatment" and "Last_Visit_to_Death," are continuous variables and OLS regression is best suited to this type of dependent variable. Two separate OLS regressions were completed in the statistical package STATA, one using the October 1918 death certificate data (N = 8,892) and one using the March 1919 death certificate data (N = 2,944). Along with the two dependent variables, the analysis contained the independent variables of Recoded_Age, Birthplace_Recoded, City_NonCity, Oct, Population_Density, marital status, and region. Binary dummy variables were created for race/sex interactions in the treatment analyses to better understand how treatment varied not just for race and gender alone, but also for the interactions of those two variables. In order to test these interactions, the variables "white_male," "black_male," "white_female," and "black_female" were created and coded 0 = no and 1 = yes so that each individual observation only has a 1 in their responding race/sex category.

Limitations

Several potential limitations in this study should be noted. First, the Ancestry.com database only includes deaths for which death certificates were written and archived.

Especially in sparsely populated counties, flu victims may have been buried without the notification of authorities and issuing of death certificates. A second potential limitation might result from missing or incorrect data, including misdiagnosed cause of death. Death certificates in the World War I era asked health providers to write two causes of death; if either gave flu as a cause, the death was counted as a flu death. Sometimes pneumonia, the actual cause of death in many cases of flu morbidity, appeared on the death certificate and no mention was made of flu (Appendices A and C provide frequencies and missing data for all variables recorded). The small number of such death certificates, 310 in October 1918 and 143 in March 1919 were not counted as flu deaths. A third source of potential data problems might stem from the use of the 1920 Census as the denominator in calculating mortality rates. It was taken on New Year's Day, 1920, so a significant population change occurring in the 15 months after 1 October 1918 and the 10 months after 1 March 1919 would distort the mortality rate. Technically, the denominator in calculating mortality and morbidity should be the population at risk during the period when numerator data were collected. Thus, the deaths occurring between 1 October 1918 and 1 January 1920 and between 1 March 1919 and 1 January 1920 should ideally be included and births occurring after the index months excluded. However, the stability of relatively large populations in the county units of analysis should mitigate the danger that reliance on 1920 Census data distorts the findings, except where the war's end caused large population shifts in counties.[89] Thus, the end of military training at Camp Greene might mean that mortality rates for Mecklenburg County in

[89] For precedent on the accepted use of 1920 Census data to provide population parameters for the 1918 influenza epidemic, see K. David Patterson and Gerald F. Pyle, "Geography and Mortality of the 1918 Influenza Epidemic" *Bulletin of the History of Medicine,* Vol. 65, No. 1 (Spring 1991), pp. 4-21.

October 1918 are overestimated; no other significant population changes in the relatively brief period before the1920 Census is known. However, a sensitivity analysis conducted for October 1918 tested whether the change in Mecklenburg County population affected analysis results and allowed for the use of results that were independent of any possible presence of an overestimation in Mecklenburg County.

RESULTS

The results appear in the order in which the sets of research questions were discussed in the previous two sections, starting with the findings from the population mortality analyses.[90] The second type of analysis involved determining the relative risk facing individuals of dying from flu or death from some other cause compared with their chances of surviving that month (October 1918 or March 1919). The third sort of result explores health care disparities in 1918-1919 by documenting the variation in the health care received by individuals who died from the flu, depending on personal characteristic and environmental variables such as where they lived.

State County- Level Analytic Results

Figures 1 and 2 are maps generated by ArcGIS showing standardized flu mortality rates for each North Carolina county for both October 1918 and March 1919. In October, the most heavily impacted counties were in the eastern part of the state, but by March, the

[90] A preliminary version of a limited portion of the first type of analysis will appear in a forthcoming edited volume on North Carolina's experience in World War I. Austin and Brandon, "Pandemic and War," forthcoming.

epidemic had shifted towards the western part of the state while still strongly present in the eastern counties. It is important to remember that the total October 1918 deaths outnumbered the total March 1919 deaths by more than 3:1 (October N = 8,892; November N = 2,944). The October 1918 map portrays where in North Carolina the epidemic struck at its peak, while the March 1919 map shows where influenza was still evident, yet flagging, at the tail end of the epidemic.

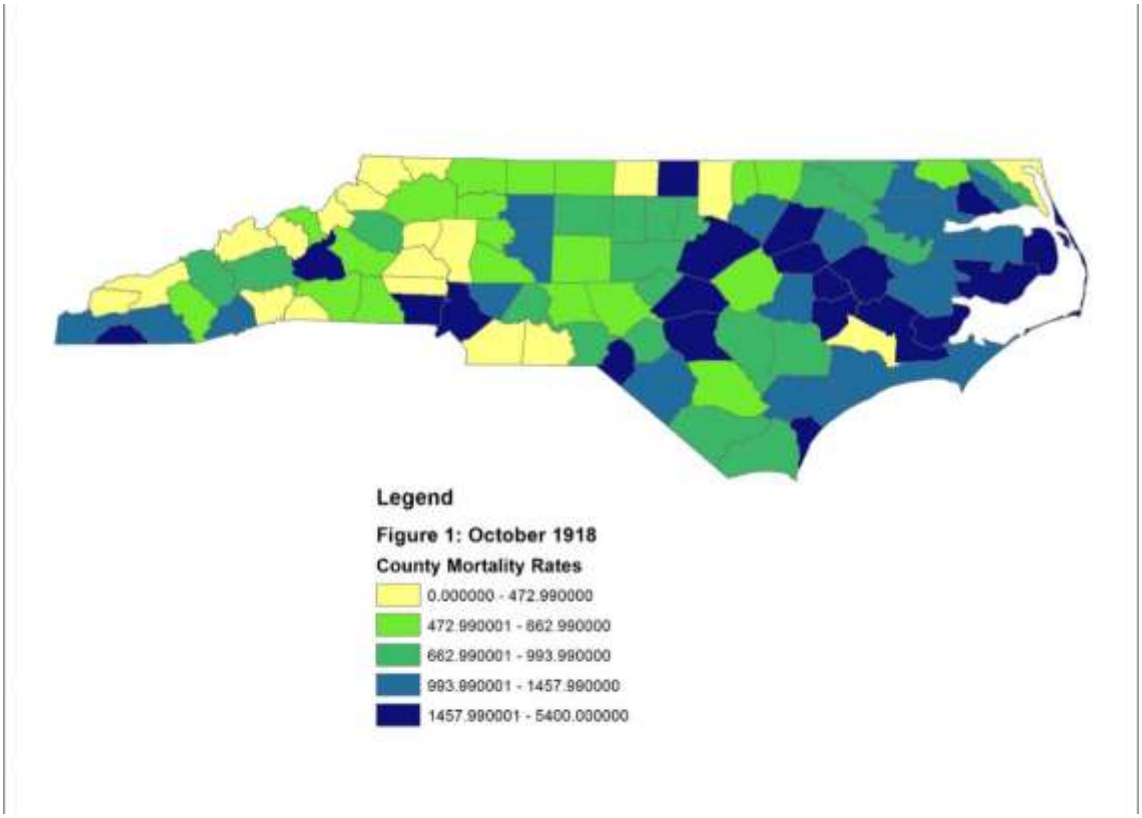

Figure 1 – October 1918 Flu Dispersion Map: County Standardized Mortality Rates by Quintiles[91]

[91] Sources: Author's calculation of age-sex-race adjusted county mortality rates; Death Certificates from (www.ancestry.com); Population in 1920 Census (www.ipums.org)

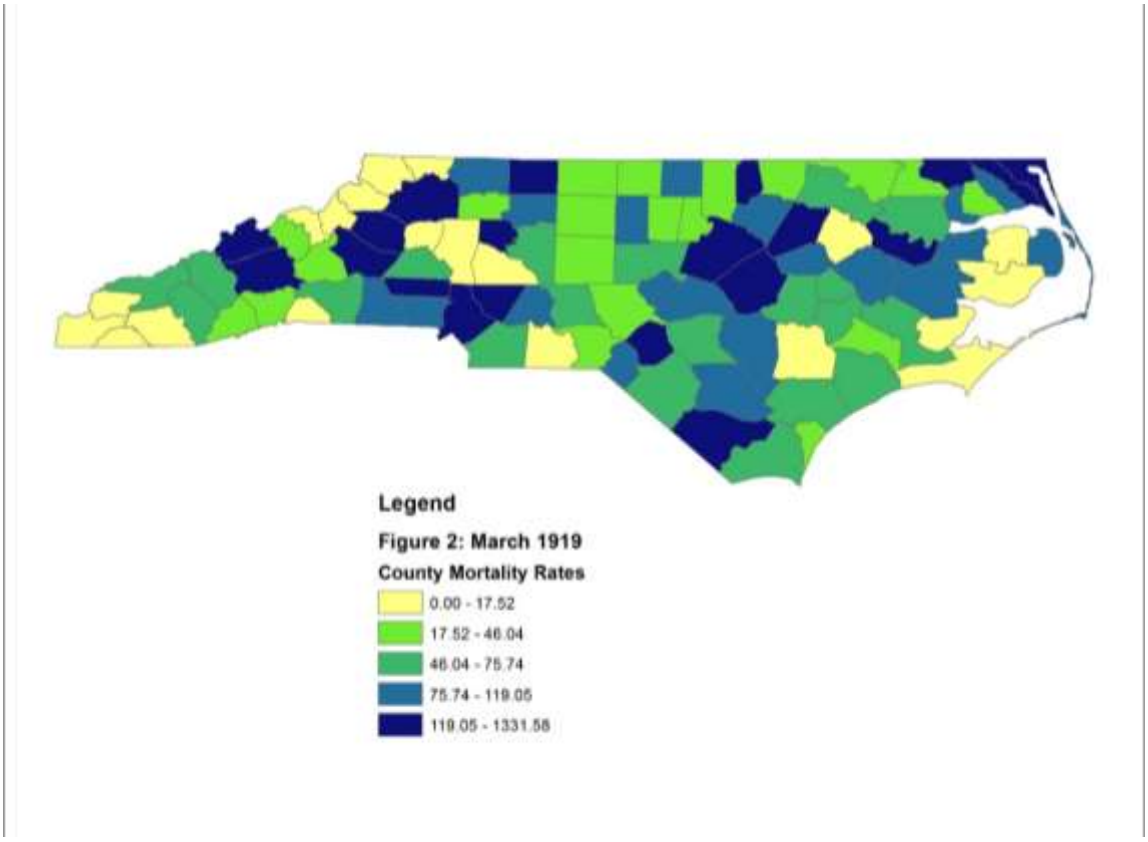

Figure 2 – March 1919 Flu Dispersion Map: County Standardized Mortality Rates by Quintiles[92]

In answering Hypothesis 1, if influenza spread throughout the state along the railroad lines from Wilmington were true, the October 1918 map would show obvious lines of demarcation from New Hanover county (the location of Wilmington) through each county between New Hanover and the major railroad hubs of the three major rail lines within North Carolina at the time, namely Mecklenburg (Charlotte), Wake (Raleigh), and Craven (New Bern) counties. However, the map for October 1918 does

[92] Sources: Author's calculation of age-sex-race adjusted county mortality rates; Death Certificates from (www.ancestry.com); Population in 1920 Census (www.usa.ipums.org)

not show higher levels of flu mortality along the railroad lines between the railroad hubs; no pattern of dispersion is evident as the counties between the hubs fall in all quintiles of the mortality rates (Figure 1). However, the map does show that the counties containing the nearest major terminal or transshipment hub—Mecklenburg, Wake, and Craven—were all in the highest quintile of flu deaths in October 1918. Mecklenburg and Wake also placed in that highest quintile in March 1919 (Figure 2), when flu mortality was much lower across the state than it had been in October 1918. This finding suggests that while influenza did not spread specifically along the railroad lines themselves, it was heavily concentrated around the major railroad hubs and that the populations near those areas were at an increased risk of dying from influenza than other populations.

In answering Hypothesis 2, that the flu spread differentially across North Carolina with areas hard hit in October experiencing lower mortality in March, it is useful to measure the spatial dispersion of the epidemic across the state's 100 counties in terms of the relative standardized flu mortality of counties in each of the four regions that modern geographers identify for North Carolina: Mountain (24 counties), Piedmont (35 counties), Coastal Plain (23 counties), and Tidewater (18 counties).[93] The regions start in the western part of the state and continue in stripes until the eastern border is reached; in this way, the Mountain region is the first one observed when looking at a map of the state and the Tidewater region is the last. As explained in the Methods Section, the investigator developed a test to determine whether any of the four geographic county groups varied significantly above or below the expected range of values. Regions equal to or falling below or above the calculated standard deviation of counties in the highest or lowest

[93] Stuart and Orr, eds., *The North Carolina Atlas.*

quintiles were considered to be highly or lightly impacted regions. Table 1 presents the results of this analysis.

By this stringent measure, while both the Coastal Plain (34.8% of 23 counties) and Tidewater (33.3% of 18 counties) felt the greatest impact of the epidemic in October 1918 (Table 1 and Figure 1), they did not exceed the standard deviation from the mean (36.0%) for the highest quintile. However, only two counties (Currituck and Jones) in the Tidewater region and no counties in the Coastal Plain region fell into the lowest (Figure 1), which emphasizes the burden that these two regions felt during October. While both the Piedmont region (11.4% of 35 counties) and the Mountain region (8.3% of 24 counties) were spared from exceeding the standard deviation from the mean during October, neither of these regions fell below the standard deviation from the mean for that quintile (7.9%). Although the Piedmont did have an elevated number of counties in the lowest quintile (22.9%), only the Mountain region exceeded the standard deviation threshold for relatively untouched counties (41.7% of its 24 counties).

Table 1: Quintile Rankings of County Standardized Flu Mortality by Geographical Region, October 1918 & March 1919

(Number, Percent of Counties in Region)

QUINTILES	REGIONS				
	Mountains	**Piedmont**	**Coastal Plain**	**Tidewater**	**COUNTIES**
	(N=24)	(N=35)	(N=23)	(N=18)	(N=100)
Highest					
October	2, 8.3%	4, 11.4%	8, 34.8%	6, 33.3%	20, 20.0%
March	5, 20.8%	7, 20.0%	**6, 26.1%***	**2, 11.1%***	20, 20.0%
Mid-high					
October	3, 12.5%	4, 11.4%	5, 21.8%	**8, 44.4%***	20, 20.0%
March	**1, 4.2%***	8, 22.9%	6, 26.1%	5, 27.8%	20, 20.0%
Middle					
October	3, 12.5%	8, 22.9%	**7, 30.4%***	2, 11.1%	20, 20.0%
March	4, 16.7%	5, 14.3%	**7, 30.4%***	4, 22.2%	20, 20.0%
Mid-low					
October	6, 25.0%	**11, 31.4%***	3, 13.0%	**0, 0.0%***	20, 20.0%
March	4, 16.7%	**11, 31.4%***	**2, 8.7%***	3, 16.7%	20, 20.0%
Lowest					
October	**10, 41.7%***	8, 22.9%	**0, 0%***	2, 11.1%	20, 20.0%
March	**10, 41.6%***	4, 11.4%	2, 8.7%	4, 22.2%	20, 20.0%
TOTAL	24, 100%	35, 100%	23, 100%	18, 100%	100, 100%

*Denotes regions that scored above or below the standard deviation of the mean for each monthly quintile and are therefore considered highly or lightly impacted regions for each month.

SOURCE: Author's calculation of age-sex-race adjusted county mortality rates. Death Certificates from (www.ancestry.com); Population in 1920 Census (www.usa.ipums.org)

In the familiar pattern of epidemics when the occurrence of the disease falls as the vulnerable population that has not yet become ill shrinks, far fewer North Carolinians died from flu in March 1919 than had succumbed in October 1918. Thus, Table 1 and Figure 2 show that relative flu mortality was somewhat more evenly dispersed across the four regions in March 1919. The Coastal Plain region (26.1%) is the only region that exceeded the standard deviation threshold (25.7%) for the highest quintile in March 1919, and the Tidewater region (11.1%) is the only region to fall below that threshold (13.3%). In terms of the quintile lowest in relative mortality, the Mountain region with 41.6% of 24 counties in the lowest quintile maintained its favorable situation in March 1919. The Coastal Plain, which had suffered increased mortality in October 1918, still placed less than 10% of its 23 counties in the lowest quintile in March 1919. In summary, the spatial analysis leads to the general conclusion that the counties in the Coastal Plain suffered the greatest overall mortality in the two sample months and that the counties in the Mountain region felt the lightest impact. However, noting the *relative* leniency of the flu mortality in the mountain counties should not be interpreted as minimizing the suffering experienced by many families in that region. The 1918-1919 flu epidemic was devastating throughout the state; no region escaped unscathed.

The third hypothesis, that training camps and manufacturing centers were particularly hard hit, can only be assessed for the months of October 1918 and March 1919, as those are the months for which this article collected data. If the epidemic took its toll in the intervening months, it would escape detection in Figures 1 and 2. By far the largest training camp was Camp Greene in Mecklenburg County, which contemporary

accounts report was hard hit by the epidemic; by March 1919 it was no longer in use.[94] (Although authorized in August 1918 as an artillery training center, Fort Bragg did not become fully operational during the war as initial construction was not completed until February 1, 1919).[95] Figures 1 and 2 show that indeed mortality in Mecklenburg was among the highest in the state in October 1918, but surprisingly the county also ranked among the highest in flu mortality in March 1919. A third training camp, Camp Polk, was located in Raleigh and served as a tank training facility from 1918 to 1919. The location of Camp Polk in Wake County undoubtedly contributed to that county being placed in the highest quintile for both October 1918 and March 1919 (Table 1 and Figures 1 and 2).

Previously in this article, the cities of Wilmington (New Hanover County), High Point (Guilford), and Raleigh (Wake) were mentioned as centers of war materiel production. These three counties show mixed results during the months of October and March. New Hanover and Wake placed in the highest quintile in October while Guilford placed in the middle quintile. In March, Wake remained in the highest quintile while both New Hanover and Guilford fell to the second lowest quintile (Table 1 and Figures 1 and 2). This finding is unsurprising because by March 1919, the war was over, and these particular counties were most likely not producing and shipping goods as frequently as they had been in October 1918. The exception is Wake, which remained a major transportation hub for both people and goods even after the war ended and consequently appeared in the highest quintile for both months examined.

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[94] See Geske, "Charlotte and Camp Greene," forthcoming.
[95] Jonathan F. Phillips, "'Now it is all Good and Better'": Fayetteville and the Origins of Fort Bragg," in *North Carolina during the First World War*, Edited by Shepherd W. McKinley and Steven Sabol (Knoxville: University of Tennessee Press, 2018), forthcoming; Matthew Shaeffer, "Fort Bragg: North Carolina History Project," http://northcarolinahistory.org/encyclopedia/fort-bragg/.

Another part of the state level hypotheses to be examined pertains to the textile manufacturing centers of North Carolina. Previous scholarly work has identified Alamance, Cabarrus, Durham, Gaston, and Guilford Counties as especially important centers of cotton textile manufacturing and suggested that the influenza epidemic may have taken an especially heavy toll among mill workers and their families.[96] However, no clear pattern emerges from the spatial diffusion analysis: Alamance, Durham, and Guilford place in the middle quintile for October 1918 mortality rates, while Cabarrus places in the second highest quintile. Gaston is the only textile-manufacturing center that places in the highest quintile for October 1918 (Table 1 and Figure 1). The picture for March 1919 in Figure 2 is no clearer: Durham and Guilford placed in the second lowest mortality, Alamance and Gaston placed in the second highest, and Cabarrus placed in the highest quintile. The March 1919 findings are unsurprising considering that it would be abnormal to see high levels of concentrated mortality at the end of the epidemic since the quantity of those who have not yet contracted the disease and consequently remain vulnerable greatly diminishes. It is also important to note that this analysis utilized influenza mortality for the entire county population, which may have resulted in masking influenza impacts on subpopulations (i.e., working age whites who supplied the majority of the workforce in the mills). Further analysis of these subpopulations will be discussed during the analysis of the individual level research findings.

The data exhibited in Table 1 and Figures 1 and 2 constitute the only database that allows valid comparison of mortality in North Carolina counties. Although they can confirm or disprove conventional wisdom about the epidemic that is based on anecdote,

[96] Cox, "Towels, Socks, and Denim," forthcoming.

the analyses generated so far have no explanatory power. Gaining true insight into meaningful associations between a phenomenon to be explained—the dependent variable standardized flu mortality—and independent variables of interest requires the use of more sophisticated quantitative analysis such as regression.

The OLS regression models for the county-level standardized mortality data are necessary to shed light on which of a county's demographic variables are more likely to be associated with an increase or decrease in the county's flu mortality level for each month. The October OLS regression model is statistically significant, with an F-value of 3.422 and a p-value of $p < 0.05$ (Table 3). The adjusted R-squared of the model is 0.109, which means that 10.9% of the change in the dependent variable (the average standardized county flu mortality) is explained by the combined influence of the independent variables in this model (Table 2).

Table 2 – Model Summary of County-Level October 1918 OLS Regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.392	.154	.109	714.39559	1.883

Table 3 – Model Significance of County-Level October 1918 OLS Regression

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8732404.310	5	1746480.862	3.422	.007
	Residual	47973940.011	94	510361.064		
	Total	56706344.321	99			

In examining the independent variables, all of the independent variables have positive standardized Beta coefficients (Population_Density = 0.198, Percent_Black = 0.029, Contained_TopCity = 0.085, Industry_Textile_Center = 0.042, and Region = 0.289), which suggests that as each of these variables increased in value the county's influenza mortality rate for October 1918 was likely to rise. However, only the relationship between standardized flu mortality and Population_Density and Region was strong enough to claim that pure chance was probably not responsible; i.e., only those two relationships are statistically significant. Population_Density (which is measured in individuals per square mile) is statistically significant at the $p < 0.05$ level and has a standardized Beta coefficient of 0.198 (Table 4). Thus, for every one-unit increase in population density, or an additional person per square mile living in a county, on average the county's standardized October 1918 influenza mortality rate increases by 0.198 units, holding all other variables constant. This outcome can also be understood as an increase of five people per square mile on average is associated with an increase of one more flu fatality (0.99 increase in the dependent variable of flu deaths). The Region variable is

also statistically significant at the $p < 0.05$ level and has a standardized Beta coefficient of 0.289. Because the regions are coded 0, 1, 2, 3 for Mountains, Piedmont, Coastal Plain, and Tidewater, moving from west to east the average increase in a county's October 1918 influenza mortality rate is .289 unit for each change of region, holding all other variables constant. It is also important to note that none of the Tolerance Collinearity Statistics fall below the 0.20 level, indicating the collinearity is a not a concern with any of these variables (Table 4).

Table 4 – Coefficient and Collinearity Results of County-Level October 1918 OLS Regression

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	415.408	167.549		2.479	.015		
	Population_Density	4.350	2.135	.198	2.037	.044*	.950	1.052
	Percent_Black	1.202	5.478	.029	.219	.827	.502	1.993
	Contained_TopCity	294.472	345.952	.085	.851	.397	.898	1.114
	Industry_Textile_Center	124.175	293.392	.042	.423	.673	.911	1.098
	Region	210.459	96.057	.289	2.191	.031*	.518	1.930

a. Dependent Variable: Oct_Mort_Rate

Note: p<.10. * p<.05. ** p<.01. *** p<.001

The results of this regression mean that among the independent variables examined at the peak of the epidemic county population density and geographical location of a county were the variables that most influenced the county's standardized flu mortality level.

Because the mortality rates are *standardized*, the dependent variable has already been adjusted to eliminate the influence of differences in population age, sex, and race among the one hundred North Carolina counties.

The March 1919 OLS regression model tells a less clear story, however. The overall model is not statistically significant, with an F-value of 0.973 and a p-value of $p > 0.05$ (Table 6). The adjusted R-squared of the model is -0.002, which means that none of the variance in the dependent variable of the March influenza mortality rate is explained by the independent variables in the model (Table 5). In other words, the model is not a good fit for the March 1919 data.

Table 5 – Model Summary of County-Level March 1919 OLS Regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.272	.074	-.002	173.05650	2.012

Table 6 – Model Significance of County-Level March 1919 OLS Regression

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	145697.455	5	29139.491	.973	.442
	Residual	1826861.580	61	29948.550		
	Total	1972559.035	66			

In examining the independent variables, Population_Density (-0.138), Percent_Black (-0.088), Industry_Textile_Center (-0.121), and Region (-0.119) all have negative

standardized Beta coefficients, which indicates that they have a negative relationship with a county's March influenza mortality rate (Table 7). However, none of these variables are statistically significant. The variable Contained_TopCity (0.223) has a positive standardized Beta coefficient indicating a positive relationship with the county's March influenza mortality rate, but this variable too is not statistically significant. No inference can be made about the relationships between variables when statistical significance is not achieved, either by the entire regression equation or in specific associations of independent and dependent variables. None of the Tolerance Collinearity Statistics fall below 0.20, which indicates that collinearity is not a problem between these variables (Table 7).

Table 7 – Coefficient and Collinearity Results of County-Level March 1919 OLS Regression

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	179.309	54.951		3.263	.002		
	Population_Density	-.607	.559	-.138	-1.084	.282	.932	1.073
	Percent_Black	-.820	1.168	-.088	-.702	.485	.958	1.044
	Contained_TopCity	161.694	101.719	.223	1.590	.117	.770	1.299
	Industry_Textile_Center	-87.710	101.430	-.121	-.865	.391	.774	1.292
	Region	-20.527	21.382	-.119	-.960	.341	.986	1.014

a. Dependent Variable: Mar_Mortality_Rate

Note: p<.10. * p<.05. ** p<.01. *** p<.001

Individual-Level Analytic Results

The fourth hypothesis, that young adults died of influenza in equal or greater numbers during the epidemic than did young children and the elderly--the usual victims of flu, was tested using unadjusted state-level data showing mortality rates by six age intervals in North Carolina in October 1918 and March 1919 (Table 8).[97] Although non-flu mortality and all-cause mortality are included in this table, the comparison among the flu mortality rates for age intervals 0-1, 2-9, 20-39 and 60 and over is especially important for testing the hypothesis. In October 1918, young adults 20-39 suffered higher mortality rates (379.41 per 100,000) than the 2-9 and 60+ age groups (149.06 and 96.94 per 100,000, respectively), but lower mortality rates than the 0-1 age group (606.41 per 100,000). In contrast, young adults 20-39 had far lower non-flu mortality (82.24 per 100,000) than infants aged 0-1(530.79 per 100,000) and the elderly (383.31 per 100,000) in March 1919. Flu mortality constituted 69.22% of all deaths in the state in October 1918, but the death certificate data reveal a far different picture in March 1919 when flu mortality fell to 17.92% of all mortality. In March 1919, flu deaths were 22.28 per 100,000 young adults, while mortality for the 0-1 age group was 73.44 per 100,000; the 2-9 age group was 9.86 per 100,000; and the elderly was 39.54 per 100,000. The non-flu mortality remained roughly the same for March 1919 as in October 1918 with infants aged 0-1 registering a 611.50 per 100,000 mortality rate; children aged 2-9 registering 18.33 per 100,000; young adults aged 20-39 registering 54.59 per 100,000; and the elderly registering a mortality rate of 414.56 per 100,000. The overall population flu mortality fell from 238.18 per 100,000 in October 1918 to 20.53 per 100,000 in March 1919.

[97] Austin and Brandon, "Pandemic and War," forthcoming.

Table 8 - North Carolina Crude Mortality Rates by Age, October 1918 and March 1919 (per 100,000 population)

	October 1918				March 1919		
Age	**Flu Mortality**	**Non-Flu Mortality**	**All-Cause Mortality**		**Flu Mortality**	**Non-Flu Mortality**	**All-Cause Mortality**
0-1	606.41	530.79	1137.20		73.44	611.50	684.94
2-9	149.06	42.54	191.60		9.86	18.33	28.19
10-19	153.44	30.79	184.23		11.40	17.86	29.26
20-39	379.41	82.24	461.65		22.28	54.59	76.87
40-59	158.42	95.37	253.79		20.57	82.28	102.85
60 & Over	96.94	383.31	480.26		39.54	415.84	455.38
Population Mortality	238.18	105.90	344.07		20.53	94.03	114.56

SOURCES: Author's Calculations; Death Certificates from (www.ancestry.com); Population in 1920 Census (www.usa.ipums.org)

The October 1918 flu mortality rates in Table 8 generate the "W"-shaped epidemiological curve with one abnormality: the expected spike for the 60+ age group is not evident in the epidemiological mortality curve (Figure 3). Elderly North Carolina residents experienced some form of protection during the height of the epidemic. Thus, Table 8 provides evidence to support the theory that elderly residents were somewhat protected in October 1918 from the deadly 1918 influenza strain, perhaps due to immunity gained by having survived an earlier epidemic of a similar strain in 1889.[98] However, by March 1919 the curve had settled back into the more normal, albeit somewhat lopsided, U-shaped influenza epidemiological curve that is most often seen during normal flu cycles. By then mortality of the 20-39-year-olds was only slightly

[98] Kolata, *Flu,"* 14.

elevated and the 60+ age group exceeded the mortality of young adults but was still slightly lower than in normal flu years (Figure 4).

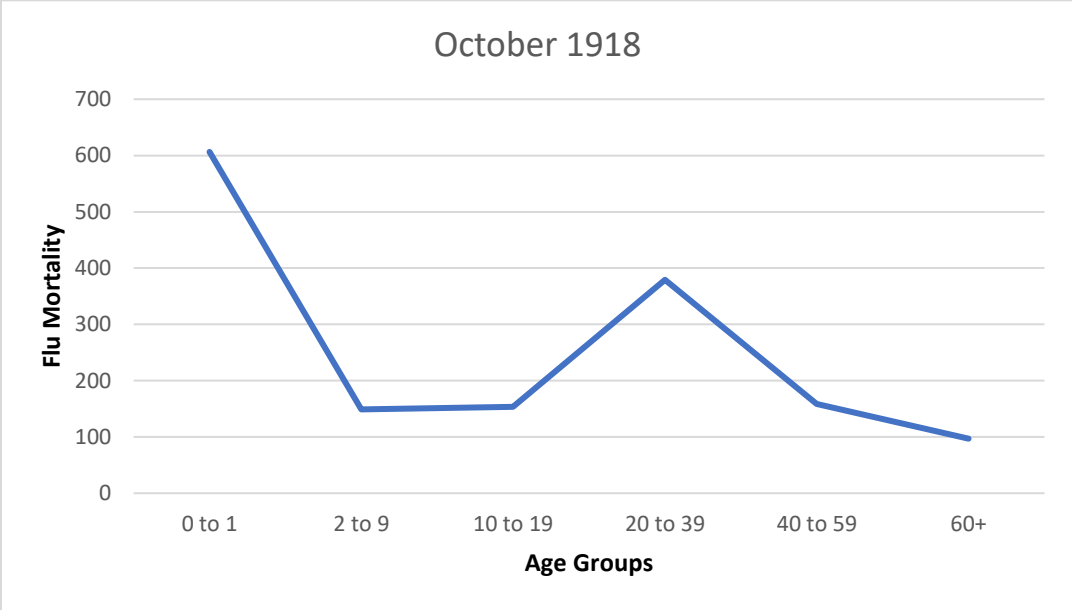

Figure 3 - Epidemiological Curve for North Carolina, October 1918
(scale is per 100,000 people)[99]

[99] Sources: Author's Calculations; Death Certificates from (www.ancestry.com); Population in 1920 Census (www.usa.ipums.org).

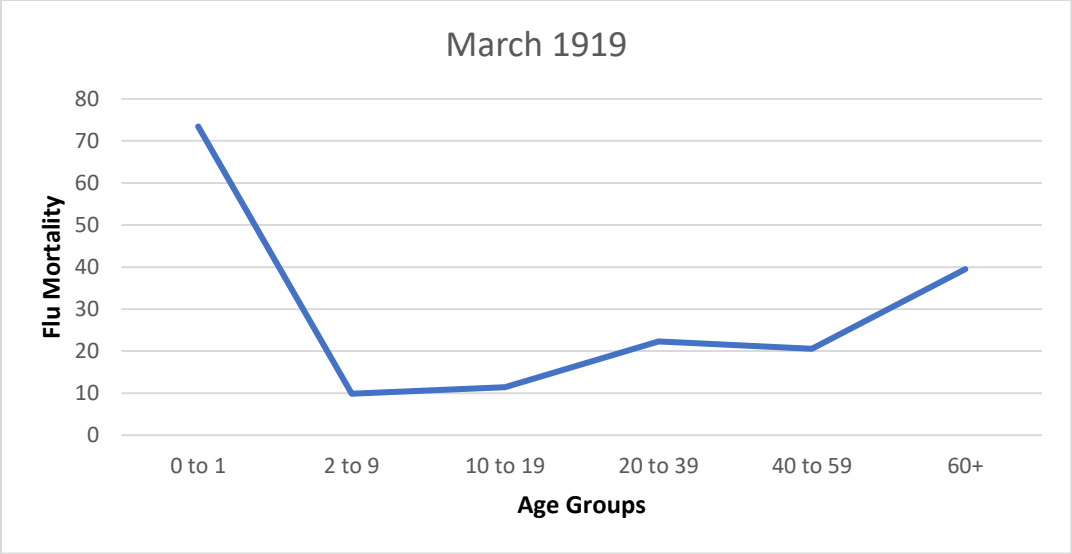

Figure 4 - Epidemiological Curve for North Carolina, March 1919
(scale is per 100,000 people)[100]

Results of Individual-Level Analysis Model. The multinomial regression model used to analyze the individual-level model can be represented by the following equation:

$$f(k, i) = \beta_{0,k} + \beta_{1,k}X_{1,i} + \beta_{2,k}X_{2,I} + \ldots \beta_{M,k}X_{M,i}$$

Where $\beta_{m,k}$ is a regression coefficient associated with the m^{th} explanatory variable and the k^{th} outcome. The regression model analysis for the individual-level analysis model for October is as follows:[101]

[100] Sources: Author's Calculations; Death Certificates from (www.ancestry.com); Population in 1920 Census (www.ipums.org).

[101] A sensitivity analysis for October 1918 was conducted due to the fact that during that month, the largest Army training facility in North Carolina, Camp Greene, was operating in Mecklenburg County, thereby placing thousands of young males at risk of death (the numerator) while the 1920 Census denominator did not reflect those temporary military residents. The sensitivity analysis involved removing Mecklenburg County from the data to ensure that that county's presence in the analysis was not skewing the results. The analysis shows no change in the results except for the statistical significance of the gender variable in the non-flu death group (Flu = 0). The p-value of the sex variable in the non-flu death category (0 = female) changed from p = 0.053) with Mecklenburg County included to p = 0.021 with Mecklenburg County excluded. The exclusion of Mecklenburg County from the analysis did not change the overall explanatory value of the flu death analytic model nor any of the flu category variable outcomes. Therefore, the analysis that retained all counties in North Carolina was used in this dissertation with one exception: the sex

Table 9 – Model Significance of October 1918 Individual-Analysis Model

Model Fitting Information

Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	5805.372			
Final	1358.141	4447.232	20	.000

Table 10 – Goodness of Fit of October 1918 Individual-Analysis Model

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	8083.630	222	.000
Deviance	648.302	222	.000

Table 11 – Explained Variance Statistics of October 1918 Individual-Analysis Model

Pseudo R-Square

Cox and Snell	.002
Nagelkerke	.038
McFadden	.037

variable outcome with Mecklenburg County excluded will be used as the determinant for the sex variable analysis for non-flu deaths only. (See Appendix B for sensitivity analysis results).

Table 12 – Likelihood Ratio Tests of October 1918 Individual-Analysis Model

Likelihood Ratio Tests

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	1358.141	.000	0	.
Birthplace_Recoded	1387.607	29.467	4	.000
Race	1818.174	460.034	2	.000
Marital Status	1431.177	73.037	2	.000
Sex	1363.429	5.289	2	.071
Age_Group	5205.888	3847.748	10	.000

Table 13 – Coefficient Estimates of October 1918 Individual-Analysis Model

Parameter Estimates

Flu[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
0	Intercept	-5.265	.359	214.760	1	.000			
	Born in NC	-.128	.355	.130	1	.719	.880	.438	1.766
	Born in Another State	-.093	.364	.065	1	.799	.912	.447	1.860
	Born in Another Country	0[b]	.	.	0	.	.	.	.
	White	-.546	.042	168.982	1	.000***	.579	.534	.629
	Black	0[b]	.	.	0	.	.	.	.
	Single	.255	.057	20.399	1	.000***	1.291	1.155	1.442
	Married	0[b]	.	.	0	.	.	.	.

	Female	.080	.042	3.737	1	.021*	1.084	.999	1.176
	Male	0[b]	.	.	0	.	.	.	.
	Age 0-1	.024	.066	.138	1	.710	1.025	.901	1.166
	Age 2-9	-2.446	.085	821.736	1	.000***	.087	.073	.102
	Age 10-19	-2.757	.094	868.768	1	.000***	.063	.053	.076
	Age 20-39	-1.706	.062	746.846	1	.000***	.182	.161	.205
	Age 40-59	-1.360	.070	373.805	1	.000***	.257	.224	.295
	Age 60+	0[b]	.	.	0	.	.	.	.
1	Intercept	-6.246	.240	677.046	1	.000			
	Born in NC	-.281	.225	1.562	1	.211	.755	.486	1.173
	Born in Another State	-.587	.232	6.407	1	.011**	.556	.353	.876
	Born in Another Country	0[b]	.	.	0	.	.	.	.
	White	-.471	.027	310.325	1	.000***	.624	.592	.658
	Black	0[b]	.	.	0	.	.	.	.
	Single	-.284	.040	51.011	1	.000***	.753	.697	.814
	Married	0[b]	.	.	0	.	.	.	.
	Female	.033	.026	1.557	1	.212	1.033	.981	1.088
	Male	0[b]	.	.	0	.	.	.	.
	Age 0-1	1.988	.093	452.458	1	.000***	7.301	6.079	8.769
	Age 2-9	.584	.093	39.279	1	.000***	1.793	1.494	2.152
	Age 10-19	.595	.092	41.547	1	.000***	1.812	1.513	2.171
	Age 20-39	1.266	.085	222.026	1	.000***	3.548	3.004	4.191

Age 40-59	.439	.093	22.448	1	.000***	1.551	1.293	1.860
Age 60+	0[b]	.	.	0	.	.	.	.

a. The reference category is 2 = those who did not die during the study period.

b. Denotes reference category within variable.

Note: p<.10. * p<.05. ** p<.01. *** p<.001

The results of the October 1918 multinomial logistic regression show that the overall model is significant at the $p < 0.001$ level (Table 9, Table 10). This specific analysis provides data for not only the three dependent variable outcomes (flu death: bottom section labeled Flu 1; non-flu death: top section labeled Flu 0; living: reference section, no outcomes given) but also for the different groups within each variable regarding their likelihood to die of flu compared to other causes. Therefore, the output provides two different levels of risk odds, one based on the Exp(B) results and one based on the overlap of confidence intervals and p-values.

The multinomial regression also shows that holding all other variables constant, those who were single had 24.7%[102] lower odds of dying from influenza and 29.1%[103] higher odds of dying of other causes than married individuals (Table 13). Because the confidence intervals of the two outcomes do not overlap the results of flu death versus non-flu death for single individuals are statistically significant from each other. The result of both outcomes was significant at the $p < 0.001$ level. Therefore, single individuals were less likely to die from flu than from other causes. There was a notable mortality disparity between single and married individuals, with single people having significantly

[102] Percentage calculated from Category 1 Exp(B) variable = 0.753 and 1 - 0.753 = 0.247 (0.247*100 = 24.7%

[103] Percentage calculated from Category 0 Exp(B) variable = 1.291 and 1.291 – 1.0 = 0.291 (0.291 * 100 = 29.1%

lower odds of dying of the flu but significantly higher odds of dying of other causes.[104] With this variable analysis as well as those that follow, the results should be interpreted keeping in mind that those who did not die during the study period (Flu = 2) are the reference category. Therefore, all variable analyses in the multinomial regression results should be considered "compared to those who did not die during the study period."

The results for the race variable show that, holding all other variables constant, in October 1918 whites had 37.6% lower odds of dying of flu and 42.1% lower odds of dying from other causes than did blacks. The two estimates are similar, and it can be concluded that they are not statistically significantly different from each other because the confidence intervals of each outcome overlap. Therefore, blacks were not more likely to die from flu than from other causes but did have significantly higher mortality than whites, both from flu ($p < 0.001$) and from other causes ($p < 0.001$). There was a notable mortality disparity between whites and blacks during the sample month of October 1918 for all causes of death, but it did not differentially affect results for blacks specifically with regard to flu death (Table 13).

The results are similar when looking at the sex variable and holding all other variables constant. In October 1918 females had 3.3% higher odds of dying of the flu and 8.4% higher odds of dying of other causes than did males. The two estimates are similar, and it can be concluded that they are not statistically significantly different from each other because the confidence intervals of each outcome overlap. Therefore, females were not more likely to die from flu than from other causes in October. The p-values reveal

[104] See Appendix D for age-specific analyses regarding the relationship between marital status and age.

that females experienced significantly higher mortality than males for all non-flu causes of death ($p = 0.021$) but did not experience significantly higher mortality than males regarding flu death ($p = 0.212$). This means that there was a notable significant mortality disparity between females and males during October 1918 for non-flu deaths, but any difference between the sex variable attributes specifically with regard to influenza may have been due to chance (Table 13).

The age variable for October shows that with regards to flu deaths and holding all other variables constant, those aged 0-1 had seven times higher odds of dying from the flu than those aged 60 and older (the elderly being the reference group for this variable), while those aged 2-9 had 79.3% higher odds, ages 10-19 had 81.2% higher odds, ages 20-39 had three times higher odds, and ages 40-59 had 55.1% higher odds of dying of the flu than those aged 60 and older. All of these results are significant at the $p < 0.001$ level. With regard to non-flu death, those aged 0-1 had 2.5% higher odds of dying than the elderly while those aged 2-9 had 91.3% lower odds, ages 10-19 had 93.7% lower odds, ages 20-39 had 81.8% lower, and those aged 40-59 had 74.3% lower odds to die of other causes than were the elderly. All of these results were statistically significant at the $p < 0.001$ level except for Age = 0-1 ($p = 0.710$). None of the confidence levels overlap between outcomes. These results show that all age groups from 0-59 had significantly higher odds of dying of the flu in October than did the 60+ elderly group, while those individuals aged 2-59 had significantly lower odds of dying from all other causes than did the elderly during that month. The results also show that in October 1918, the elderly were more likely to die of other causes than from flu. There was a notable mortality disparity between age groups, with the elderly having significantly lower odds of dying

from the flu than all other ages, but significantly higher odds of dying from some other cause than all ages other than infants (Table 13).

The results for the "birthplace" variable show that, holding all other variables constant, the p-values for the "born in North Carolina" attribute exceed levels of significance ($p = 0.211$ for flu deaths and $p = 0.719$ for non-flu deaths) and that the confidence intervals of both outcomes overlap. This means that the risks of death, both from flu and from other causes, did not differ significantly between individuals born in North Carolina or other states, or between individuals born in North Carolina and other countries (Table 13).

The regression model analysis for the individual-level analysis model for March is as follows:

Table 14 - Model Significance of March 1919 Individual-Analysis Model

Model Fitting Information

Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	4764.052			
Final	913.231	3850.821	20	.000

Table 15 - Goodness of Fit of March Individual-Analysis Model

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	40362.416	220	.000
Deviance	418.860	220	.000

Table 16 - Explained Variance Statistics of March Individual-Analysis Model

Pseudo R-Square

Cox and Snell	.002
Nagelkerke	.085
McFadden	.084

Table 17 - Likelihood Ratio Tests of March 1919 Individual-Analysis Model

Likelihood Ratio Tests

	Model Fitting Criteria	Likelihood Ratio Tests		
Effect	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	913.231[a]	.000	0	.
Birthplace_Recoded	923.527	10.296	4	.036
Race	1000.321	87.091	2	.000
Marital Status	968.123	54.892	2	.000
Sex	915.679	2.448	2	.294
Age_Group	4675.508	3762.277	10	.000

Table 18 - Coefficient Estimates of March 1919 Individual-Analysis Model

Parameter Estimates

Flu[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
0	Intercept	-5.823	.452	165.996	1	.000			
	Born in NC	.392	.449	.763	1	.382	1.480	.614	3.567
	Born in Another State	.255	.457	.311	1	.577	1.290	.526	3.163
	Born in Another Country	0[b]	.	.	0	.	.	.	.
	White	-.347	.044	61.610	1	.000***	.707	.648	.771
	Black	0[b]	.	.	0	.	.	.	.

	Single	.429	.058	54.855	1	.000***	1.535	1.371	1.720
	Married	0[b]	.	.	0	.	.	.	.
	Female	-.067	.043	2.434	1	.119	.935	.860	1.017
	Male	0[b]	.	.	0	.	.	.	.
	Age 0-1	.061	.062	.979	1	.322	1.063	.942	1.200
	Age 2-9	-3.393	.112	922.856	1	.000***	.034	.027	.042
	Age 10-19	-3.396	.111	931.841	1	.000***	.034	.027	.042
	Age 20-39	-1.991	.065	927.145	1	.000***	.137	.120	.155
	Age 40-59	-1.540	.073	449.208	1	.000***	.214	.186	.247
	Age 60+	0[b]	.	.	0	.	.	.	.
1	Intercept	-23.934	.259	8531.59	1	.000***			
	Born in NC	16.478	.219	5656.88	1	.000***	14336137.04	9331292.59	22025332.8
	Born in Another State	16.046	.000	.	1	.	9299982.734	9299982.73	9299982.73
	Born in Another Country	0[b]	.	.	0	.	.	.	.
	White	-.484	.090	28.867	1	.000***	.616	.517	.735
	Black	0[b]	.	.	0	.	.	.	.
	Single	-.147	.129	1.290	1	.256	.864	.670	1.112
	Married	0[b]	.	.	0	.	.	.	.
	Female	.010	.088	.013	1	.909	1.010	.849	1.201
	Male	0[b]	.	.	0	.	.	.	.
	Age 0-1	.700	.183	14.570	1	.000***	2.013	1.406	2.884
	Age 2-9	-1.416	.208	46.428	1	.000***	.243	.161	.365

Age 10-19	-1.182	.194	37.061	1	.000***	.307	.210	.449
Age 20-39	-.567	.153	13.762	1	.000***	.567	.420	.765
Age 40-59	-.649	.175	13.727	1	.000***	.523	.371	.737
Age 60+	0[b]	.	.	0	.	.	.	.

a. The reference category is 2 = those who did not die during the study period.

b. Denotes reference category within variable.

Note: p<.10. * p<.05. ** p<.01. *** p<.001

The results for the March 1919 multinomial logistic regression show that the overall model is significant at the $p < 0.001$ level (Table 14, Table 15). The regression results for the March marital status variable show that single individuals had 13.6% lower odds of dying from influenza and 53.5% higher odds of dying from other causes than were those who were married. The result for singles who died due to causes other than flu was statistically significant at the $p < 0.001$ level, but the result for those who died of influenza in March was not statistically significant ($p = 0.256$). Therefore, while single individuals seemingly had lower odds of dying from influenza than did married people, any differential effect relating to flu death was not statistically significant. However, as with October 1918, single individuals had significantly higher odds than marrieds of dying of causes other than flu (Table 18).

The results are inconclusive regarding the Birthplace_Recoded variable. The logged odds results are abnormally large and cannot be successfully interpreted. This non-finding resulted from the fact that the number in dying in March 1919 (Flu = 0/1) is significantly smaller than in October 1918 (Flu = 0/1): As Table 19 shows, the SPSS

statistical package had insufficient data with the value “born in another country” for the Birthplace variable to produce a logged odds ratio for comparison.

Table 19 – Crosstabulation of Birthplace_Recoded, All Deaths (October 1918 and March 1919), and 1920 Living Population

		Month of Death			
		Living Population	Died in October 1918	Died in March 1919	Total
Birthplace_Recoded	Born in NC	2394425	8182	2790	2405397
	Born in other State	160010	641	147	160798
	Born in Other Country	7524	69	7	7600
Total		2561959	8892	2944	2573795

Because only 0.0002% (N = 7) of the sample (N = 2,573,795) reported being born outside of the United States for the combined March dataset used for analysis, SPSS was unable to calculate results for this variable. Therefore, differences in odds ratios of dying from flu or other causes for the Birthplace_Recoded variable for March cannot be determined.

The results for the race variable show that, holding all other variables constant, whites had 38.4% lower odds of dying from influenza and 29.3% lower odds of dying from other causes than did blacks during the month of March 1919. The two estimates are similar, and it can be concluded that they are not statistically significantly different from each other because the confidence intervals of each outcome overlap. Therefore, blacks were not more likely to die from flu than from other causes in March 1919, but they did have significantly higher mortality than whites, both from flu ($p < 0.001$) and from other causes ($p < 0.001$). Again, there was a notable mortality disparity between whites and

blacks during the month, but it did not differentially affect results for race specifically with regard to flu death (Table 18).

The results for the sex variable in March 1919 changed greatly from those in October 1918. Holding all other variables constant, the p-values for both flu death ($p = 0.909$) and non-flu death ($p = 0.119$) both exceed the threshold for significance. Also, the confidence intervals of both outcomes overlap. This means that the risks of death, both from flu and from other causes, did not differ significantly between males and females in March 1919, nor were females more likely to die from flu than from other causes (Table 18).

The age variable shows that with regards to March 1919 flu deaths and holding all other variables constant, those aged 0-1 had two times greater odds of dying from influenza than did elderly aged 60+ (the elderly being the reference group for this variable), while those aged 2-9 had 75.7% lower odds, those aged 10-19 had 69.3% lower odds, those aged 20-39 had 43.3% lower odds, and those aged 40-59 ha 47.7% lower odds of dying from influenza than did the elderly. All of these results were statistically significant at the $p < 0.001$ level. With regard to non-flu death, those aged 0-1 had 6.3% higher odds of dying than the elderly while those aged 2-9 had 66.0% lower odds, ages 10-19 had 66.0% lower odds, ages 20-39 had 86.3% lower odds, and those aged 40-59 had 78.6% lower odds of dying from other causes than did the elderly. All of these results were statistically significant at the $p < 0.001$ level except for Age 0-1 ($p = 0.322$). These results show that for the month of March 1919, the elderly were more likely to die of influenza than from other causes and they had greater odds of doing so than did individuals aged 2-59. However, infants under one year of age were the age group most

likely to die of influenza than from other causes during the month of March 1919 (Table 18).

Individual-Level Treatment Analytic Results

The multiple linear regression models used to treat the two individual-level treatment hypotheses can be represented by the following equation:

$$Y'_i = b_0 + b_1X_{1i} + b_2X_{2i\ldots} + b_kX_{ki}$$

Because the dependent variable of the first model (Y = Days_Treatment) has a continuous numerical outcome, the results of the multiple linear regression tell the reader by how many units the dependent variable of "Days_Treatment" is expected to increase or decrease for every one-unit increase in each of the independent variables, taking into consideration the control variables included in the regression model. When looking at the result, it is important to remember that in order to avoid skewing the results of the dependent variable and also because the focus of this portion of the analysis is interested only in treatment received when the individual died from influenza, only those individuals who died of the flu (Flu = 1) were included in the following two models.

Table 20 – OLS Regression Model for Days of Treatment Received

Source	SS	df	MS		
				Number of obs	= 6,406
				F(14, 6391)	= 10.45
Model	62709.7885	14	4479.27061	Prob > F	= 0.0000
Residual	2740684.88	6,391	428.835062	R-squared	= 0.0224
				Adj R-squared	= 0.0202
Total	2803394.67	6,405	437.688473	Root MSE	= 20.708

Days_Treatment	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
black_male	-.9194775	.7825182	-1.18	0.240	-2.453475	.6145205
black_female	-1.666924	.7656439	-2.18	0.030	-3.167843	-.1660053
white_female	.2927148	.6734302	0.43	0.664	-1.027434	1.612864
age_group1	-2.594055	.9660647	-2.69	0.007	-4.487866	-.7002445
age_group2	-2.665022	.9665424	-2.76	0.006	-4.559769	-.7702751
age_group3	-1.753943	.9136138	-1.92	0.055	-3.544932	.0370463
age_group5	.9854643	.9002601	1.09	0.274	-.7793474	2.750276
age_group6	-2.079698	1.511847	-1.38	0.169	-5.043425	.8840276
married	-.9328469	.7448068	-1.25	0.210	-2.392918	.5272242
Birthplace_Recoded	.9089551	1.110222	0.82	0.413	-1.267452	3.085362
City_NonCity	-1.216739	1.017589	-1.20	0.232	-3.211556	.7780768
oct	-10.07921	.9617864	-10.48	0.000	-11.96463	-8.193786
popdense	.004883	.0066314	0.74	0.462	-.0081167	.0178828
region	-.4248569	.3236051	-1.31	0.189	-1.059231	.2095176
_cons	17.3291	1.460847	11.86	0.000	14.46535	20.19285

Table 21 – Multicollinearity Check of Days of Treatment OLS Regression Model

Variable	VIF	1/VIF
married	2.07	0.483041
age_group1	1.86	0.537241
age_group2	1.72	0.580898
age_group3	1.60	0.625529
black_female	1.48	0.676154
black_male	1.45	0.691147
white_female	1.44	0.693666
City_NonCity	1.28	0.783330
popdense	1.23	0.812235
region	1.15	0.871486
age_group5	1.14	0.879827
age_group6	1.10	0.908658
Birthplace~d	1.09	0.921396
oct	1.06	0.947437
Mean VIF	1.40	

The multiple linear regression shows that the overall model is significant at the $p < 0.001$ level and the adjusted R^2 is 0.0202 which means that the independent variables included in the model explain 2.02% of the variation in the dependent variable (Table 20). The low adjusted R^2 is most likely due to the fact that other factors besides those present in the model had greater impact on the amount of treatment an individual received. Among likely determinants that are not recorded on the death certificate were what the sick person could afford and whether a doctor was even available. Multicollinearity checks (Table 21) show that collinearity among variables is not an issue (no VIF exceeds 10.0).

The regression model shows no statistically significant difference in the total amount of treatment received by black males ($p = 0.24$) or white females ($p = 0.67$) compared to white males but does show a statistically significant difference in the amount of care that black females were experienced compared to that of white males. The model suggests that, all else equal and holding all other variables constant, black females received on average approximately 1.67 days less treatment than did white males. This finding is significant at the $p < 0.05$ level. Of those individuals included in the model, only black females received significantly fewer days of medical treatment than did white males (Table 20).

Regarding age, the regression model shows that, all else equal and holding all other variables constant, infants age 0-1 (1) received 2.59 fewer days of treatment than did the young adult reference group (4) and children aged 2-9 received 2.67 fewer days of treatment than did young adults; both findings were statistically significant at the $p < 0.05$ level. Older children aged 10-19 (3) also received approximately 1.76 fewer days of

treatment than did the young adult reference group, but this finding was only marginally significant ($p = 0.055$). The 40-59 age group (5) averaged 0.99 more days of treatment and the 60 and older group (6) 2.08 fewer days of treatment, but neither of these results were statistically significant. The model shows that on average no age group received more days of medical attention than those aged 20-39 (Table 20).

The model shows no significant difference in the days of treatment received between those who were single and those who were married ($p = 0.21$), between those who were born in North Carolina and those born elsewhere ($p = 0.41$), those who lived in one of the top five largest cities and those who did not ($p = 0.23$), those who lived in more densely populated areas and those who lived in more rural areas ($p = 0.46$), and those who lived in different geographical regions of North Carolina ($p = .19$) (Table 20).

The model does reveal that those who died of the flu in October 1918 received approximately 10.08 fewer days of treatment than did those who died of the flu in March 1919; this finding was statistically significant at the $p < 0.001$ level. Overall, the model suggests that black females, those aged 0-19, and those who died in October 1918 received the least amount of total medical care.

The second model run to test the individual level treatment data was another multiple linear regression model that tested the dependent variable "Last_Visit_to_Death" and the same independent variables tested in the previous treatment analysis. The equation for this regression is as follows:

$$Y'_i = b_0 + b_1X_{1i} + b_2X_{2i\ldots} + b_kX_{ki}$$

The purpose of the dependent variable "Last_Visit_to_Death" is to determine which of the independent variables in the model, if any, influenced the length of time in days

between the last physician visit and the date of death. The reasons for the longer length of time from last visit until death is not contained within this dataset, but the analysis can show if there was any systematic difference in the level of care received among individuals based on their demographic characteristics and place of residence. Because the dependent variable (Y = Last_Visit_to_Death) has a continuous numerical outcome, the results of the multiple linear regression tell the reader by how many units (days) the dependent variable of "Last_Visit_to_Death" is expected to increase or decrease for every one-unit increase in each of the independent variables, taking into consideration the control variables included in the regression model.

Table 22 – OLS Regression Model for Number of Days Between Last Visit and Death

Source	SS	df	MS	Number of obs	=	5,171
				F(14, 5156)	=	1.97
Model	1323.09717	14	94.5069405	Prob > F	=	0.0162
Residual	247105.519	5,156	47.9258183	R-squared	=	0.0053
				Adj R-squared	=	0.0026
Total	248428.616	5,170	48.0519567	Root MSE	=	6.9228

Last_Visit_to_De~h	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
black_male	.913038	.2964509	3.08	0.002	.3318685	1.494207
black_female	.5322451	.2913622	1.83	0.068	-.0389484	1.103438
white_female	.1233836	.240954	0.51	0.609	-.3489885	.5957557
age_group1	-.3712857	.3725785	-1.00	0.319	-1.101698	.3591262
age_group2	-.4006139	.3622677	-1.11	0.269	-1.110812	.3095844
age_group3	-.0166363	.3339439	-0.05	0.960	-.6713081	.6380354
age_group5	.0821174	.3262663	0.25	0.801	-.557503	.7217379
age_group6	.1856595	.5703344	0.33	0.745	-.9324378	1.303757
married	-.3871995	.2704127	-1.43	0.152	-.9173232	.1429242
Birthplace_Recoded	-.4316037	.3896259	-1.11	0.268	-1.195436	.3322285
City_NonCity	-.5442097	.3660288	-1.49	0.137	-1.261781	.173362
oct	-.7458919	.3499208	-2.13	0.033	-1.431885	-.0598987
popdense	-.0018626	.0024134	-0.77	0.440	-.006594	.0028687
region	-.0048122	.1251268	-0.04	0.969	-.2501138	.2404894
_cons	1.998891	.5507296	3.63	0.000	.9192271	3.078554

Table 23 – Multicollinearity Check of Last Visit to Death OLS Regression Model

Variable	VIF	1/VIF
married	2.07	0.483041
age_group1	1.86	0.537241
age_group2	1.72	0.580898
age_group3	1.60	0.625529
black_female	1.48	0.676154
black_male	1.45	0.691147
white_female	1.44	0.693666
City_NonCity	1.28	0.783330
popdense	1.23	0.812235
region	1.15	0.871486
age_group5	1.14	0.879827
age_group6	1.10	0.908658
Birthplace~d	1.09	0.921396
oct	1.06	0.947437
Mean VIF	1.40	

The multiple linear regression shows that the overall model is significant at the $p < 0.05$ level and the adjusted R^2 is 0.0026, which means that the independent variables included in the model explain 0.26% of the variation in the dependent variable (Table 22). The very low adjusted R^2 is most likely due to the fact that other factors besides those present in the model had greater impact on the amount of treatment an individual received. Multicollinearity checks (Table 23) show that collinearity among variables is not an issue (no VIF exceeds 10.0).

The model shows that on average black men survived approximately 0.91 more days after the physician's last visit compared to white men, and this finding is statistically significant at the $p < 0.01$ level. On average, black females waited about 0.53 days longer between the physician's last visit and death than did white males and this result is approaching borderline significance at the $p = 0.07$ level. White females did not show any

statistically significant differences in the number of days between last physician visit and death when compared to white males ($p = 0.61$). None of the other five age groups (1-3, 5-6) showed any statistically significant differences in the number of days between last physician visit and death when compared to young adults (4) ($p=0.32$, $p=0.27$, $p=0.96$, $p=0.80$, and $p=0.75$, respectively). The model also showed no significant difference in the days of treatment received between those who were single and those who were married ($p = 0.15$), those who were born in North Carolina and those born elsewhere ($p = 0.27$), those who lived in one of the five largest cities and those who did not ($p = 0.14$), those who lived in more densely populated areas and those who lived in more rural areas ($p = 0.44$), and those who lived in different geographical regions of North Carolina ($p = .97$) (Table 22).

However, the model surprisingly shows that, all else equal and holding all other variables constant, those individuals who died of the flu in October 1918 experienced 0.75 days less time between last physician visit and death compared to those who died of the flu in March 1919. This finding is statistically significant at the $p < 0.05$ level. Overall, the model suggests that black males, black females marginally, and those who died in March 1919 were the only individuals who experienced any significant differences between the amount of time that passed between the physician's last visit to treat them for the flu and the day they died, based on the independent and control variables present in the model. Both black men and women as a group experienced longer periods without treatment between their last encounter with a physician and death.

DISCUSSION

In light of the fact that no study of the 1918-1919 influenza epidemic has been done using the entire population of a state as the sampling frame, and no quantitative study has been done on North Carolina's experience during the epidemic, this article had three goals. First, to explore North Carolina's experience with the 1918-1919 influenza epidemic at the county level; second, to explore its experience at the individual level; third, to explore the provision of healthcare to flu victims in North Carolina during this period. This article used a series of OLS regression models, multinomial regression models, and ArcGIS mapping techniques to provide key findings from two sample months: October 1918, which was known to be the month with the greatest mortality, and March 1919, considered to be the last month of the epidemic.

One of the main findings of this article and one that has not previously been discussed in the 1918 influenza epidemic literature is that during the height of the epidemic in October 1918, single individuals had significantly *lower odds* of dying from influenza (24.7%) than did married individuals; yet they also had 29.1% *greater odds* of dying from other causes than those who were married. The disparity remained during the March 1919 findings, but the flu findings were no longer statistically significant (Table 13 and Table 18). The regression analysis of flu death outcome on marital status held all other variables constant so the findings regarding marital status were independent of age (i.e., a disproportionate number of singles among those under 20 cannot affect the finding). In addition, the combination of divorced and widowed individuals into the single category did not distort outcomes since only 4.4% of North Carolina residents

during the study period reported being divorced or widowed.[105] These findings suggest that being single provided some sort of buffer from dying of the flu while simultaneously increasing one's likelihood of dying from other causes. Perhaps the most obvious explanation for this outcome is that a higher proportion of single individuals lived alone and therefore experienced less exposure to the highly contagious flu virus from sick individuals than did married individuals during the epidemic. Their increased likelihood of dying from all other combined causes (including diseases related to poor diet and sanitary conditions) may perhaps be explained by their propensity to live alone since doing so would mean that they were significantly less likely to experience in-home care and nurturing than were married individuals. Contemporary heath care studies have found that longer life expectancy is observed for those who are married even after controlling for age, that married individuals have lower mortality rates than do single, widowed, or divorced individuals, and that the differences between married and unmarried statuses are much greater for men than for women.[106] Because this article's finding is a new discovery about the 1918 influenza epidemic and is contrary to previous findings regarding marital status and mortality, it should be a useful subject for further study.

Another significant finding is that those aged 60 and older were the age group with the lowest odds of dying from flu during the deadly height of the epidemic in October 1918 while young adults aged 20-39 had the greatest odds aside from infants.

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[105] United States Census, 1920.
[106] Walter R. Grove, "Sex, Marital Status, and Mortality," *American Journal of Sociology* 79:1 (July 1973), 45-67; Charles C. Lin, E. Rogot, N.J. Johnson, P.D. Sorlie, and E. Arias, "A Further Study of Life Expectancy by Socioeconomic Factors in the National Longitudinal Mortality Study," *Ethnicity & Disease* 13:2 (January 2003), 240-247.

This finding provides analytical support for the speculation of Patterson, Pyle, Reid, Taubenberger, and Fanning that the elderly experienced some level of immunoprotection in the fall due to either exposure to a previous epidemic in 1889 or heightened exposure to the unmutated strain in the spring of 1918.[107] The overall mortality curve for October 1918 (Figure 3, Table 8) was not the W-shape that is commonly expected from previous epidemiological studies of the 1918-1919 influenza epidemic[108] but rather a spike in both the beginning (infants) and middle (young adults) with a sharp drop off at the end (elderly). This suggests that the 1918 flu epidemic affected age groups in a singularly different manner than other flu epidemics and supports the suggestions of scholars such as Patterson, Pyle, Reid, Taubenberger, and Fanning that the 1918 strain contained some form of mutation that caused it to have an epidemiological idiosyncrasy to target young adults.

It is important to note that the analyses show that not only did the number of March influenza deaths total less than 9% of the October influenza deaths (N = 529 in March compared to N = 6,152 in October), the influenza mortality curve for March 1919 differs from that of October 1918. Whereas the curve for October evidences a sharp decline in mortality for the elderly (Figure 3), the March curve shows that flu mortality for the elderly had risen higher than all age groups other than infants (Figure 4). This suggests that the strain circulating in March 1919 was a different strain than the deadly one prevalent in October 1918. This change of virulence and possibly of strain throughout the winter of 1918-1919 was noted by citizens at the time of the epidemic.

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[107] Patterson and Pyle, "Geography and Mortality," 4; Reid et al., "Integrating History and Biology," 82.
[108] For an example, see Taubenberger and Morens, "The Mother of all Pandemics," 15-22.

One soldier stationed Camp Greene in Charlotte, North Carolina wrote to this girlfriend in mid-December 1918 that "there has been quite a lot of flu in town, we sent a few nurses to help in one of the hospitals the other day, but I don't believe it as virulent as before."[109] Unfortunately, as pointed out by Taubenberger and Morens, the only 1918 pandemic samples yet identified have been from second-wave patients (fall 1918), so virology is unable to contribute genetic knowledge about whether the first spring wave (spring 1918) or the third wave (spring 1919), represent circulation of the same virus or variants of it.[110]

However, the results of this article suggest that the strain circulating in March 1919 was in fact a different strain than had circulated in the fall, as evidenced by the change in mortality curves between the two sample months and a reversion to the increased mortality levels for the elderly that are found in standard influenza epidemics. This evidence indicates that perhaps March 1919 should not be considered part of the 1918-1919 influenza pandemic. Annual Reports of the Bureau of Vital Statistics of the North Carolina State Bureau of Health show that in 1915 the state recorded 125 March flu deaths, 167 in March 1916, 61 in March 1917, and 126 in March 1924 (no information is available for the intervening years aside from the months of the epidemic). Based on these reports, the 529 flu deaths reported in March 1919 is obviously elevated by normal standards, which suggests the presence of an epidemic. However, further studies to determine how well March fits in with the other 1918-1919 epidemic months should be undertaken. The findings of this article pertaining to the different month

[109] Letter from Private Joseph B. Mathews to Eva La Flamme, December 14, 1918, Joseph B. Mathews Papers, Box 1, Folder 2, Special Collections, Manuscripts, University of North Carolina at Charlotte.
[110] Taubenberger and Morens, "The Mother of all Pandemics," 15-22.

outcomes should provide support for future studies in which the strains of the three waves of the pandemic are analyzed for genetic differences.

Another interesting point elucidated by analysis of the age variable during the sample period is that of infant outcomes. In both October 1918 and March 1919, the infant age group 0-1 had the highest odds of dying of influenza out of all groups (Figure 3 and Figure 4). Also, the treatment analyses show that children aged 0-1 received on average 2.59 days less treatment than did young adults ($p < 0.01$) and children aged 2-9 received on average 2.67 days less treatment than did young adults ($p < 0.01$). The possible explanations for these outcomes are multiple. First, the disease could have killed young children faster than it did young adults since they lacked the robust immune system commonly boasted by the 20-39 age group. Considering that the robust immune systems of the young adult age group is what is considered to have triggered the lingering pneumonia outcome commonly seen among patients of the deadly fall strain, the fact that young children lacked such a characteristic could have influenced the way that they experienced the disease. If children succumbed more quickly to the disease, then they naturally would have received less days of treatment.

A second explanation is that young children during the sample period often came down with diseases as children. Vaccination for childhood disease was largely unknown, with the consequence that sick children were commonplace during the early 20th century. Consequently, a child becoming sick with a respiratory illness would not have been an abnormal occurrence and may therefore not have sparked enough parental concern to call for a doctor as soon as their child became sick, especially during October 1918 when the deadlier aspects of the strain were still unknown.

A third and considerably darker possible explanation for children aged 0-9 having received less medical treatment than young adults is that perhaps young children at the time were valued less than their adult counterparts. The concept of childhood is a modern one; children were historically seen as mini-adults and were often expected to work alongside the family and contribute to its wellbeing, especially in the poorer and rural families that constituted the bulk of the North Carolina population, as the background section of this paper explained. Those who were too young to contribute were often viewed as burdens on the family until they reached the age at which they could provide help.[111] It was not until the late 19th century that a more modern attitude towards children began to emerge; the Victorian era upper and increasingly affluent middle classes emphasized the role of the family and the sanctity of the child – this attitude has been absorbed by Western societies and remained dominant ever since.[112] However, only fifty years after losing a devastating war and far removed from the comfortable home and gardens of Victorian Britain and its imitations in Boston and New York, it is likely that this modern view of childhood had not fully permeated rural North Carolina by 1918 and that larger rural families remained dependent for survival on the labor of their children in fields and mills. If such were the case, then parents may have been less likely to send and subsequently pay for a physician's visit for a sick child if that child were not big enough to help than they would have been for older children who were able to make a wage or take part in farm labor. This possible explanation for the finding that young children aged

[111] Philippe Ariès, *Centuries of Childhood: A Social History of Family Life* (London: Jonathan Cape. Ltd., 1965), pp. 33-50.
[112] Ibid., 405-411.

0-9 received on average 2.6 fewer days of treatment than did their older counterparts is one that is worthy of future study.

The analysis of this article also showed that, despite anecdotal supposition to the contrary, blacks were not significantly more or less likely to die from influenza than from other causes during the study period, but they did experience significantly higher mortality than whites for both flu and no-flu deaths. This finding does not support Alfred Crosby's claim that the African-American community may have experienced some degree of immunity during the fall wave due to higher than average levels of flu within their community during the less-deadly spring 1918 wave because of socioeconomic disparities within that community.[113] Nor does the finding support the anecdotal evidence provided by Vanessa Northington Gamble that blacks were perceived at the time of the epidemic to be less susceptible and therefore experience lower mortality rates from influenza.[114] It is important to note that during the time of the epidemic, blacks were not more likely to live in rural areas in North Carolina than were whites. Data from the 1920 Census shows that 81.2% of whites lived in rural areas compared to 79.7% of blacks, and that 18.8% of whites lives in urban areas compared to 20.3% of blacks.[115] Therefore, the African-American community was not disproportionately located in rural areas, so they received no abnormally increased or decreased exposure to influenza compared to whites due to their geographic location. It should also be noted that the issue of population composition differences could not have affected outcomes in the county-level analyses because the dependent variable had been adjusted for race, as well as for age and gender.

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[113] Crosby, *Pandemic*, p. 229.
[114] Gamble, "Comfort," 114-122.
[115] United States Census, 1920.

The findings of this article show that the African-American community did experience higher mortality than did whites during the study period, both from influenza and from other causes, but were not more or less likely to die of influenza than from any other cause.

The two statistically significant findings from the race-influenza analysis were that black females received fewer overall days of healthcare for influenza than did whites and black males experienced more days without care immediately before death than did white males. Remembering that blacks were more likely to live in urban areas than were whites (20.3% compared to 18.8%), this disparity regarding medical assistance for black females and males can therefore not be attributed to their living disproportionately in rural areas where it was more difficult to find a physician. Possible explanations for these findings are that the African-American community had less overall access to physician care, or that they were less likely to be able to afford physician care, especially multiple visits, than were whites. Although there were no specific treatments available for influenza in 1918-1919, meaning that those who had access to medical care would likely fare no better than those who did not,[116] these findings highlight the healthcare disparities present in North Carolina in the early twentieth century and the need for the statewide public health system overhaul that was sparked in the years following the influenza epidemic.[117]

Relatedly, perhaps the most difficult findings to interpret in the analyses are those of the month variable outcomes of treatment OLS regressions. These findings indicate

[116] Dr. L.G. Walker, Jr., personal communication, January 26, 2018.
[117] Austin and Brandon, "Pandemic and War," forthcoming.

that in October 1918 individuals experienced on average 10 fewer days of treatment compared to March 1919, but they also waited on average 0.75 fewer days between the doctor's last visit and death in October than in March. This suggests that patients experienced less overall physician care in October, but they were also able to see the doctor closer to their date of death in October. While these findings initially seem confusing, one explanation could be that doctors were spread far more thinly in October (both with increasing patient numbers and with succumbing to the disease themselves) and could therefore spend far less time with each patient, especially concerning repeat visits. With so many more patients in October than in March, physicians in October may not have been able to visit patients very often and were more likely to be unable to attend a patient until closer to their death. Also, many physicians were sent out of the state or country in connection with military service during the fall of 1918 but were home by March 1919 as the war had ended.[118] Another explanatory factor could be that by March 1919, the general public was much more aware of the dangers of this particular influenza epidemic and were quicker to seek initial and repeated physician care.

Additionally, the decreased treatment time in October could indicate not only the fact that physicians were spread thinly, but also perhaps that patients in October needed less overall treatment than did March patients. The idea that the dominant flu virus in October 1918 often caused rapid death (but slow recovery for those surviving), as the literature reviewed in the third section suggests, supports the possibility that the March strain of influenza could have been different from the mutated strain experienced in

[118] For an example, see letters pertaining to the service of Dr. John W. Martin of Rosemary, North Carolina dated October 17-19, 1918 in the Claude Kitchin Papers, #406, Folder 475.

October; thus, the findings could be interpreted to indicate that the October patients experienced less overall care because they succumbed to the mutated strain far more quickly than typical flu victims. If by March 1919, the strain had once again mutated back to an older form of flu, flu patients would need more physician care, as the virus would better represent the normal lingering type of influenza as opposed to the expedited death experienced by many October victims. Future studies should examine these possibilities and discuss how they contribute to the overall understanding of the influenza epidemic of 1918 and the physician care experienced during that event.

This article also found that the Coastal Plain suffered the greatest overall mortality in the two sample months and that the Mountain region felt the lightest impact. This finding is new within the field of study and does not fully support the assertion of scholars such as Cockrell, Cox, Sefton, Jackson, Innes, Daniels, and Johnson that the 1918 influenza strain spread so quickly because it followed the paths of large-scale movements and concentrations of people and goods due to mobilization for WWI and that it spread westward along the railroad lines.[119] For this suggestion to be supported, the analyses in this article should have provided evidence that influenza spread consistently along the major transportation routes as well as in areas that boasted elevated concentrations of mill and factory workers. However, the results of the ArcGIS spatial diffusion mapping do not show higher levels of flu mortality along the railroad lines between the railways hubs, nor do they show a clear consistent pattern of influenza spread in the major textile or manufacturing centers.

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[119] Cockrell, "Blessing," 310; Cox, "Towels, Socks, and Denim," forthcoming; JS Oxford et al, "Word War I May Have Allowed the Emergence of 'Spanish' Influenza," *The Lancet: Infectious Diseases* 2: 111-114, p. 114.

The ArcGIS results do, however, find that areas which served as railroad hubs and those that had higher population densities were more affected throughout the epidemic (Figure 1, Figure 2, Table 4). These findings indicate that while influenza dispersion between October 1918 and March 1919 did in fact move westward (Figure 1, Figure 2, Table 4), the two areas hardest and least hit, the Coastal Plain and Mountain regions, respectively, remained consistent throughout the epidemic. These findings support those of the October 1918 county level OLS regression analysis, which show that a county's population density and region were significantly and positively related to their influenza mortality rate during the second wave of the epidemic in the fall of 1918. Future studies should conduct further analysis of the geographical spread of influenza during all months of the 1918-1919 epidemic in North Carolina is necessary to make conclusions regarding precisely how and why the disease spread throughout the state the way in which it did.

The overall influenza mortality findings compiled from the death certificates of the sample months speaks to the strength of the methodology of this article. The North Carolina State Board of Health noted in 1919 that 6,561 individuals died of influenza in North Carolina in October 1918; my analysis of death certificates showed 6,152 flu victims for that month.[120] The State Board of Health compiled its mortality statistics from sources other than death certificates; the fact that the monthly tallies for October 1918 only differ by 409 individuals speaks not only to the strength of the methods used by the State Board of Health to count influenza deaths directly after the epidemic but also to the validity of my choice to use North Carolina death certificates as my sampling frame for

[120] Rankin, "Annual Report, 1919," 350. There were no reported numbers for March 1919 in this report, so no comparison can be made.

this study. Consequently, any concerns regarding the methodological limitations of this study should be quelled by the similarity of these monthly totals, some 101 years apart. Future studies on the 1918-1919 influenza epidemic in North Carolina should continue to use the death certificates housed at the State Archives as a sampling frame without undue concern regarding the limitations such a sample places on such studies.

CONCLUSION

In sum, this article contributes to the field of study of the influenza epidemic of 1918-1919 with the new finding that single individuals had significantly lower odds of dying from influenza during the deadly 1918 fall wave than did those who were married; by finding that those aged 60 and older were the age group with the lowest odds of dying of flu during the deadly 1918 fall wave, which provides quantitative support for the supposition made by previous researchers that the elderly experienced some form of immunoprotection either from an earlier outbreak in 1889 or from the spring 1918 strain; and by highlighting the disparities between the mortality rates and mortality curves of the October 1918 and March 1919 sample months, which suggests that the month of March functioned not as part of the deadly fall strain but operated as a more standard form of the flu, similar to that which circulated in the spring of 1918, and should therefore not be considered as an epidemic month for this virulent fall outbreak. Another important contribution to the field of study is the finding that while blacks were not more likely to die of influenza than from any other cause during the study period, they did in fact experience higher mortality from flu and all other causes than did whites, as well as a healthcare disparity in the form of fewer days of treatment (black females) and not having

access to a physician for more days before their death (black males). Finally, this article found that the influenza virus did not spread across the state westward via the railroad lines as previously thought, nor did influenza seem consistently prevalent in mill or factory areas as previously thought; at most, the disease was associated with population density and region and spread out from railway hubs which also functioned as busy urban areas.

The implications of these findings suggest that more work needs to be done concerning the newly found connection between marital status and influenza experience during the 1918-1919 epidemic, as well as further research into whether or not the third wave of the epidemic (spring 1919) was a somewhat different strain from that which circulated in the fall of 1918 and should perhaps not even be considered as part of the epidemic at all. The analyses of this article provide new thought-provoking findings which highlight the fact that although the influenza epidemic of 1918-1919 may be over 100 years in the past, there is still a lot to be discovered about its dispersion across larger geographical areas, its impact on certain population subcultures, and the differing levels of physician and health care available across those population subcultures.

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APPENDICES

APPENDIX A

Table 24 - Population Frequencies (Total Number of Death Certificates = 11,836)

Variable	N =
October 1918 Deaths – All Cause	8,892
October 1918 Flu Deaths	6,152
October Deaths – Listed as Pneumonia Only	310
October 1918 Deaths – Male	4,427
October 1918 Deaths – Female	4,456
October 1918 Deaths – White	5,073
October 1918 Deaths - Black	3,715
October 1918 Deaths - Single	5,046
October 1918 Deaths – Married	3,523
October 1918 Deaths – Age 0-1	1,564
October 1918 Deaths – Age 2-9	1,108
October 1918 Deaths – Age 10-19	1,083
October 1918 Deaths – Age 20-39	3,357
October 1918 Deaths – Age 40-59	950
October 1918 Deaths – Age 60+	753
March 1919 Deaths – All Cause	2,944
March 1919 Flu Deaths	529
March Deaths – Listed as Pneumonia Only	143
March 1919 Deaths – Male	1,496
March 1919 Deaths – Female	1,442
March 1919 Deaths – White	1,812
March 1919 Deaths – Black	1,102
March 1919 Deaths – Single	1,919
March 1919 Deaths – Married	1,014
March 1919 Deaths – Age 0-1	942
March 1919 Deaths – Age 2-9	163
March 1919 Deaths – Age 10-19	172
March 1919 Deaths – Age 20-39	559
March 1919 Deaths – Age 40-59	385
March 1919 Deaths – Age 60+	714
1920 North Carolina Total Population	2,561,959
1920 Total Population - Male	1,278,572

1920 Total Population – Female	1,283,387
1920 Total Population – White	1,781,627
1920 Total Population – Black	768,580
1920 Total Population - Single	1,632,476
1920 Total Population – Married	929,483
1920 Total Population – Age 0-1	137,531
1920 Total Population – Age 2-9	578,292
1920 Total Population – Age 10-19	587,839
1920 Total Population – Age 20-39	727,181
1920 Total Population – Age 40-59	374,325
1920 Total Population – Age 60+	156,791

APPENDIX B

Sensitivity Analysis for October 1918

A sensitivity analysis for October 1918 was conducted due to the fact that during that month, the largest Army training facility in North Carolina, Camp Greene, was operating in Mecklenburg County, thereby placing thousands of young males at risk of death (the numerator) while the 1920 Census denominator did not reflect those temporary military residents. The sensitivity analysis involved removing Mecklenburg County from the data to ensure that that county's presence in the analysis was not skewing the results. The analysis shows no change in the results except for the statistical significance of the gender variable in the non-flu death group (Flu = 0). The p-value of the sex variable in the non-flu death category (0 = female) changed from p = 0.053) with Mecklenburg County included to p = 0.021 with Mecklenburg County excluded. The exclusion of Mecklenburg County from the analysis did not change the overall explanatory value of the flu death analytic model nor any of the flu category variable outcomes. Therefore, the analysis that retained all counties in North Carolina was used in this dissertation with one exception: the sex variable outcome with Mecklenburg County excluded will be used as the determinant for the sex variable analysis for October 1918 non-flu deaths only.

Table 25 – Model Fit of Sensitivity Analysis

Model Fitting Information

Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	5665.155			
Final	1349.487	4315.669	20	.000

Table 26 – Overall Model Significance of Sensitivity Analysis

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	8109.735	222	.000
Deviance	651.495	222	.000

Table 27 – Explained Variance Statistics for Sensitivity Analysis

Pseudo R-Square

Cox and Snell	.002
Nagelkerke	.038
McFadden	.037

Table 28 – Likelihood Ratios of Sensitivity Analysis

Likelihood Ratio Tests

	Model Fitting Criteria	Likelihood Ratio Tests		
Effect	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	1349.487	.000	0	.
Birthplace_Recoded	1376.051	26.564	4	.000
Race	1776.787	427.300	2	.000
Marital Status	1417.795	68.308	2	.000
Sex	1357.022	7.535	2	.023
Age_Group	5105.136	3755.649	10	.000

Table 29 – Coefficient Estimates of Sensitivity Analysis

Parameter Estimates

Flu[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
0	Intercept	-5.212	.359	210.236	1	.000			
	Born in NC	-.192	.355	.291	1	.590	.826	.411	1.657
	Born in Another State	-.193	.365	.280	1	.597	.824	.403	1.686
	Born in Another Country	0[b]	.	.	0	.	.	.	.
	White	-.515	.043	144.685	1	.000***	.598	.550	.650
	Black	0[b]	.	.	0	.	.	.	.
	Single	.257	.057	20.004	1	.000***	1.293	1.155	1.447
	Married	0[b]	.	.	0	.	.	.	.
	Female	.097	.042	5.331	1	.021*	1.102	1.015	1.197
	Male	0[b]	.	.	0	.	.	.	.
	Age 0-1	.009	.067	.018	1	.892	1.009	.885	1.150
	Age 2-9	-2.466	.087	812.615	1	.000***	.085	.072	.101
	Age 10-19	-2.755	.094	854.649	1	.000***	.064	.053	.077
	Age 20-39	-1.734	.064	744.472	1	.000***	.177	.156	.200
	Age 40-59	-1.372	.071	370.055	1	.000***	.254	.221	.292
	Age 60+	0[b]	.	.	0	.	.	.	.
1	Intercept	-6.263	.252	619.564	1	.000***			
	Born in NC	-.255	.237	1.156	1	.282	.775	.487	1.233
	Born in Another State	-.562	.245	5.290	1	.021*	.570	.353	.920

Born in Another Country	0[b]	.	.	0	.	.	.	.
White	-.471	.027	300.490	1	.000***	.624	.592	.659
Black	0[b]	.	.	0	.	.	.	.
Single	-.277	.040	46.880	1	.000***	.758	.700	.821
Married	0[b]	.	.	0	.	.	.	.
Female	.040	.027	2.210	1	.137	1.040	.987	1.096
Male	0[b]	.	.	0	.	.	.	.
Age 0-1	1.977	.094	440.379	1	.000***	7.221	6.004	8.686
Age 2-9	.568	.094	36.585	1	.000***	1.765	1.468	2.122
Age 10-19	.584	.093	39.494	1	.000***	1.794	1.495	2.152
Age 20-39	1.249	.086	212.711	1	.000***	3.487	2.948	4.124
Age 40-59	.431	.093	21.290	1	.000***	1.539	1.281	1.848
Age 60+	0[b]	.	.	0	.	.	.	.

a. The reference category is: 2 – those who did not die during the study period.

b. Denotes reference category within variable.

Note: p<.10. * p<.05. ** p<.01. *** p<.001

APPENDIX C

Table 30 - Missing Data Frequencies

(Total Death Certificates Coded for October 1918: 8,892; Total Coded for March 1919: 2,944)

Variable	Total Number of Missing Values
October 1918 – Sex	9
October 1918 - Race	16
October 1918 – Marital Status	322
October 1918 – Age	77
October 1918 – Birthplace	130
October 1918 – Total Days of Treatment	2,114
October 1918 – Last Visit to Death	2,114
October 1918 – Cause of Death	255
March 1919 – Sex	6
March 1919 – Race	6
March 1919 – Marital Status	11
March 1919 – Age	9
March 1919 – Birthplace	27
March 1919 – Total Days of Treatment	829
March 1919 – Last Visit to Death	829
March 1919 – Cause of Death	143

APPENDIX D

Age-Specific Analyses Showing Crude Percentages of Cause of Death by Marital Status

Table 31 - Age-Specific Analysis of those aged 10-19 and marital status/flu death

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Marital Status * Flu	1227	99.4%	7	0.6%	1234	100.0%

Marital Status * Flu Crosstabulation

			Flu		
			0	1	Total
Marital Status	Not married	Count	234	862	1096
		% within Marital Status	21.4%	78.6%	100.0%
		% within Flu	88.6%	89.5%	89.3%
		% of Total	19.1%	70.3%	89.3%
	Married	Count	30	101	131
		% within Marital Status	22.9%	77.1%	100.0%
		% within Flu	11.4%	10.5%	10.7%
		% of Total	2.4%	8.2%	10.7%
Total		Count	264	963	1227
		% within Marital Status	21.5%	78.5%	100.0%
		% within Flu	100.0%	100.0%	100.0%
		% of Total	21.5%	78.5%	100.0%

Table 32 - Age-Specific Analysis of those aged 20-29 and marital status/flu death

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Marital Status * Flu	1968	90.1%	217	9.9%	2185	100.0%

Marital Status * Flu Crosstabulation

			Flu		
			0	1	Total
Marital Status	Not married	Count	174	489	663
		% within Marital Status	26.2%	73.8%	100.0%
		% within Flu	40.3%	31.8%	33.7%
		% of Total	8.8%	24.8%	33.7%
	Married	Count	258	1047	1305
		% within Marital Status	19.8%	80.2%	100.0%
		% within Flu	59.7%	68.2%	66.3%
		% of Total	13.1%	53.2%	66.3%
Total		Count	432	1536	1968
		% within Marital Status	22.0%	78.0%	100.0%
		% within Flu	100.0%	100.0%	100.0%
		% of Total	22.0%	78.0%	100.0%

Table 33 - Age-Specific Analysis of those aged 30-39 and marital status/flu death

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Marital Status * Flu	1623	96.8%	53	3.2%	1676	100.0%

Marital Status * Flu Crosstabulation

			Flu		
			0	1	Total
Marital Status	Not married	Count	136	217	353
		% within Marital Status	38.5%	61.5%	100.0%
		% within Flu	31.1%	18.3%	21.7%
		% of Total	8.4%	13.4%	21.7%
	Married	Count	302	968	1270
		% within Marital Status	23.8%	76.2%	100.0%
		% within Flu	68.9%	81.7%	78.3%
		% of Total	18.6%	59.6%	78.3%
Total		Count	438	1185	1623
		% within Marital Status	27.0%	73.0%	100.0%
		% within Flu	100.0%	100.0%	100.0%
		% of Total	27.0%	73.0%	100.0%

Table 34 - Age-Specific Analysis of those aged 40-49 and marital status/flu death

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Marital Status * Flu	789	99.5%	4	0.5%	793	100.0%

Marital Status * Flu Crosstabulation

			Flu		
			0	1	Total
Marital Status	Not married	Count	74	81	155
		% within Marital Status	47.7%	52.3%	100.0%
		% within Flu	23.5%	17.1%	19.6%
		% of Total	9.4%	10.3%	19.6%
	Married	Count	241	393	634
		% within Marital Status	38.0%	62.0%	100.0%
		% within Flu	76.5%	82.9%	80.4%
		% of Total	30.5%	49.8%	80.4%
Total		Count	315	474	789
		% within Marital Status	39.9%	60.1%	100.0%
		% within Flu	100.0%	100.0%	100.0%
		% of Total	39.9%	60.1%	100.0%

Table 35 - Age-Specific Analysis of those aged 50-59 and marital status/flu death

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Marital Status * Flu	508	99.0%	5	1.0%	513	100.0%

Marital Status * Flu Crosstabulation

			Flu		
			0	1	Total
Marital Status	Not married	Count	93	38	131
		% within Marital Status	71.0%	29.0%	100.0%
		% within Flu	29.4%	19.8%	25.8%
		% of Total	18.3%	7.5%	25.8%
	Married	Count	223	154	377
		% within Marital Status	59.2%	40.8%	100.0%
		% within Flu	70.6%	80.2%	74.2%
		% of Total	43.9%	30.3%	74.2%
Total		Count	316	192	508
		% within Marital Status	62.2%	37.8%	100.0%
		% within Flu	100.0%	100.0%	100.0%
		% of Total	62.2%	37.8%	100.0%

Table 36 - Age-Specific Analysis of those aged 60-69 and marital status/flu death

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Marital Status * Flu	567	98.8%	7	1.2%	574	100.0%

Marital Status * Flu Crosstabulation

			Flu		
			0	1	Total
Marital Status	Not married	Count	176	46	222
		% within Marital Status	79.3%	20.7%	100.0%
		% within Flu	39.1%	39.3%	39.2%
		% of Total	31.0%	8.1%	39.2%
	Married	Count	274	71	345
		% within Marital Status	79.4%	20.6%	100.0%
		% within Flu	60.9%	60.7%	60.8%
		% of Total	48.3%	12.5%	60.8%
Total		Count	450	117	567
		% within Marital Status	79.4%	20.6%	100.0%
		% within Flu	100.0%	100.0%	100.0%
		% of Total	79.4%	20.6%	100.0%

Table 37 - Age-Specific Analysis of those aged 70-79 and marital status/flu death

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Marital Status * Flu	516	99.4%	3	0.6%	519	100.0%

Marital Status * Flu Crosstabulation

			Flu		
			0	1	Total
Marital Status	Not married	Count	244	32	276
		% within Marital Status	88.4%	11.6%	100.0%
		% within Flu	54.2%	48.5%	53.5%
		% of Total	47.3%	6.2%	53.5%
	Married	Count	206	34	240
		% within Marital Status	85.8%	14.2%	100.0%
		% within Flu	45.8%	51.5%	46.5%
		% of Total	39.9%	6.6%	46.5%
Total		Count	450	66	516
		% within Marital Status	87.2%	12.8%	100.0%
		% within Flu	100.0%	100.0%	100.0%
		% of Total	87.2%	12.8%	100.0%

Table 38 - Age-Specific Analysis of those aged 80-89 and marital status/flu death

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Marital Status * Flu	256	98.8%	3	1.2%	259	100.0%

Marital Status * Flu Crosstabulation

			Flu		
			0	1	Total
Marital Status	Not married	Count	170	13	183
		% within Marital Status	92.9%	7.1%	100.0%
		% within Flu	71.7%	68.4%	71.5%
		% of Total	66.4%	5.1%	71.5%
	Married	Count	67	6	73
		% within Marital Status	91.8%	8.2%	100.0%
		% within Flu	28.3%	31.6%	28.5%
		% of Total	26.2%	2.3%	28.5%
Total		Count	237	19	256
		% within Marital Status	92.6%	7.4%	100.0%
		% within Flu	100.0%	100.0%	100.0%
		% of Total	92.6%	7.4%	100.0%

Table 39 - Age-Specific Analysis of those aged 90+ and marital status/flu death

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Marital Status * Flu	69	100.0%	0	0.0%	69	100.0%

Marital Status * Flu Crosstabulation

			Flu		
			0	1	Total
Marital Status	Not married	Count	45	8	53
		% within Marital Status	84.9%	15.1%	100.0%
		% within Flu	73.8%	100.0%	76.8%
		% of Total	65.2%	11.6%	76.8%
	Married	Count	16	0	16
		% within Marital Status	100.0%	0.0%	100.0%
		% within Flu	26.2%	0.0%	23.2%
		% of Total	23.2%	0.0%	23.2%
Total		Count	61	8	69
		% within Marital Status	88.4%	11.6%	100.0%
		% within Flu	100.0%	100.0%	100.0%
		% of Total	88.4%	11.6%	100.0%

CHAPTER 3: "WE HEAR OF SO MANY DEATHS THAT WE HARDLY TAKE NOTICE THESE DAYS": A TRI-LEVEL QUALITATIVE ANALYSIS OF NORTH CAROLINA'S RESPONSE TO THE 1918-1919 INFLUENZA PANDEMIC

INTRODUCTION

In the sultry early autumn days of mid-September 1918, a pestilence crept into North Carolina via the port city of Wilmington in New Hanover County[1] and quickly took root there, spreading out its far-reaching tendrils of blue-tinted death across the state faster than anyone could have expected. While the state of North Carolina bustled with wartime commerce, manufacturing, and military training during those frantic days leading to the close of World War I, something far closer to home than the fighting front was threatening the lives of each North Carolinian resident. This mutated strain of influenza spread westward from the coast, enveloping the state in a blanket of fear, uncertainty, and impending death as the influenza epidemic of 1918-1919 took shape.

The fact that the influenza epidemic struck at the same time that the war raged meant that the two events became intricately tied together and forever mutually associated with one another. How then is it possible that almost everyone is aware of the horrors of the first World War but so many have never heard of the epidemic of 1918 that killed more individuals than did the war itself? For perspective, World War I was

[1] David L. Cockrell, "'A Blessing in Disguise: The Influenza Epidemic of 1918 and North Carolina's Medical and Public Health Communities," *The North Carolina Historical Review* 73:3 (July 1996), 311.

responsible for just over nine million combat deaths and fifteen million total deaths; the 1918-1919 influenza epidemic was responsible for between twenty and one-hundred million deaths worldwide in a much shorter time period.[2] However, even before the pandemic ended it almost seemed to have been forgotten, almost erased from personal recollection and published literature. At first "overshadowed," then "blocked out," and finally "incorporated" into the wartime experience, the epidemic lost its independence as one of the most deadly periods in history.[3] Elizabeth Outka argues in her 2014 article "'Wood for the Coffins Ran Out': Modernism and the Shadowed Afterlife of the Influenza Pandemic" that in the midst of war it was too awful, too humiliating, or too bitterly ironic to die of influenza while a war was raging or to survive the war only to die of influenza.[4] This unwillingness to give the epidemic more power than the unprecedented first World War could have led to the epidemic being actively repressed in both individual and societal consciousness. She also argues that the war served as a way to block the epidemic, both in the censored press as well as in the overwrought emotional state of those who suffered through the war.[5] Finally, Outka suggests that the mourning period for influenza victims was incorporated into that of the war victims so that the epidemic lost its independence and became absorbed into the war experience.[6]

Similarly, historian Alfred Crosby points out that since soldiers who died of influenza in military hospitals were counted as part of the war dead, many people

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[2] Gina Kolata, *Flu: The Story of the Great Influenza Pandemic of 1918 and the Search for the Virus that Caused It* (New York: Farrar, Straus and Giroux, 1999), 7.
[3] Alfred W. Crosby, *American's Forgotten Pandemic: The Influenza of 1918, Second Edition* (New York: Cambridge University Press), 295; Elizabeth Outka, "'Wood for the Coffins Ran Out': Modernism and the Shadowed Afterlife of the Influenza Pandemic," *Modernism/modernity* 21:4 (November 2014), 943.
[4] Outka, "Wood," 944.
[5] Ibid., 945.
[6] Ibid., 946.

categorized the flu "simply as a subdivision of the war." As such, Crosby argues that at the time people found that the best way "to lend dignity to their battles with disease was to subsume them within the war."[7] This combining of the epidemic with the war in order to emotionally and mentally process the simultaneous occurrence of two traumatic events meant that the epidemic, having been consumed within the experience of the war itself, lost its independent nature as an important and unprecedently catastrophic pestilence of the time.

Crosby also points out an interesting juxtaposition in the notable writing generated by World War I and its aftermath in contrast to the writings dealings with the epidemic. He notes that, "it is especially puzzling that among those Americans who let the pandemic slip their minds were many members of that group of supposedly hypersensitive young people who were to create some of the greatest masterpieces of American literature, i.e., 'the lost generation' for so many of whom World War I, the other great killer of the era, was the central experience of their lives."[8] Crosby is referring to authors like Gertrude Stein, who drove an ambulance in France during the pandemic; John dos Passos, who crossed the Atlantic on a troopship with Spanish influenza on board and men dying every day; F. Scott Fitzgerald, whose ambition to fight in the war was thwarted when his division was delayed shipment to France on account of the epidemic and whose trusted confidant and advisor, Father Sigourney Webster Fey died of the flu in January 1919; and William Faulkner, who had his training schedule with the Royal Airforce in Canada disrupted in the fall of 1918 when at least a quarter of his entire

[7] *Crosby, Forgotten Pandemic*, 320.
[8] Ibid., 315.

base was stricken with the flu.[9] None of these authors included an influenza epidemic in their stories or novels, and none of them wrote about their own experiences during the epidemic.

Crosby attributes the disappearance of the influenza epidemic in American memory not only to its absorption into the period of war but also to the fact that "it came, scooped up its victims, and disappeared forever," a swiftness that allowed it to be denied a place of permanence in the American narrative. However, this isn't entirely true. The epidemic did not last for a couple of weeks or even a month. It raged from September 1918 until March 1919, claiming thousands of victims, disrupting countless homes and communities, leaving behind numerous families mourning loved ones, and quite often orphans alone in the world. The disease course itself was swift but the epidemic experience as felt in America and North Carolina was not swift enough to explain its dismissal in the narrative of society. Crosby also argues that the epidemic is not remembered because it did not kill "one or more of the really famous figures of the nation or world."[10] This observation may be partially true[11] but it hardly excuses the fact that the

[9] Ibid., 315-316.
[10] Ibid., 321.
[11] President Wilson reportedly went into the WWI peace talks determined to fight for leniency for Germany, one of the few leaders who held this view. However, he came down with influenza on April 3, 1919. He insisted on returning to the talks on April 8th but with a marked change in personality. Members of his staff noted that his mind had lost its "resiliency," that he had lost the ability to grasp things quickly, suffered from short-term memory loss, and harbored obsessive paranoid thoughts. Without warning or consulting any other American in attendance, he suddenly agreed to the punitive demands against Germany, let Italy take whatever it wanted, and let Japan take over German concessions in China. Four months later, Wilson suffered a stroke from which he never recovered. Both Crosby and Barry argue that neurological complications of the flu caused a personality change in Wilson, which led to more punitive reparations being forced on Germany, which eventually led to the continuing international friction, German backlash, and other factors leading to World War II. For more information see, John M. Barry, *The Great Influenza: The Story of the Deadliest Pandemic in History* (New York: Viking Penguin, 2004). 384-386; Alfred W. Crosby, *American's Forgotten Pandemic: The Influenza of 1918, Second Edition* (New York: Cambridge University Press); Susan Kingsley Kent, *The Influenza Pandemic of 1918-1919: A Brief History with Documents*, (Boston: Bedford/St. Martin's), 20-22.

epidemic did claim the lives of as many as one-hundred million wives, husbands, sons, daughters, mothers, and fathers worldwide whose untimely deaths deserve some remembrance. Surely the loss of so many loved ones dear to their families' hearts ought to stand alongside the unexpected death of someone "famous" in forcing that event into memory?

Likewise, journalism and communications professor Janice Hume argues that perhaps either the difficulties in dealing with a baffled medical community or the sheer magnitude of the epidemic at a time when national publications were also covering the war in Europe dissuaded reporters or editors from reporting on this large-scale domestic crisis. With "no beginning or end, no definable enemies, no one who fit the twentieth-century definition of male hero to laud, and no institutionalized commemoration," the influenza epidemic of 1918-1919 inevitably took a backseat to World War I, with its "comfortable protagonists and definable enemies" and a story that was in most ways far easier to tell.[12]

Historian Nancy Bristow argues that "while Americans neglected the pandemic in the public sphere and soon erased it from the national narrative, millions of Americans continued to remember the ways in which their lives were forever changed by the influenza crisis of 1918-1919."[13] She claims that while the public and shared narratives may neglect the epidemic, surely private recollections and correspondence tell a different tale and that for "those who suffered from influenza and those who lost loved ones to the

[12] Janice Hume, "The 'Forgotten' 1918 Influenza Epidemic and Press Portrayal of Public Anxiety." *J &MC Quarterly* 77:4 (Winter 2000): 898-915.
[13] Nancy K. Bristow, *American Pandemic: The Lost Worlds of the 1918 Influenza Epidemic* (New York: Oxford University Press, 2012), 6.

disease, 1918 pandemic lived on in vivid memories and in lives indelibly marked by those experiences."[14] This argument is partly true; while the experience may have lived on in memory, as this chapter will show, it very rarely lived on in correspondence or memoirs after the cruel rush of the October sweep passed through North Carolina and a sort of desensitization took place.

One issue to consider when attempting to reconcile the actual experience of the epidemic with the remembered event and characteristics thereof is the relationship between memory and fact, between memory and the event itself. Scholar Walter Benjamin notes that, "An experienced event is finite – at any rate, confined to one sphere of experience; a remembered event is infinite, because it is only a key to everything that happened before and after it."[15] The caution presented here is that whereas the event itself occurs in a sort of vacuum, outside of some familiar understood context, the remembrance of the event from any distance is influenced and shadowed by the personal experiences of those who are relating their experience; individuals are always influenced by their own personal lens of experience. Historian Alessandro Portelli further explains that using the memory of individuals as a form of history requires that the memory manipulates factual details and chronological sequence in order to serve three major functions: symbolic, in which memories are used to represent symbols and contexts; psychological, in which the event is changed to heal feelings and account for discrepancies; and formal, in which events are shifted horizontally to allow for time-

[14] Ibid., 7.
[15] Walter Benjamin, "The Image of Proust," *Illuminations*, trans. Harry Zohn (New York: Schocken Books, 1969), 202.

marking functionality (to better order the passage of time).[16] Portelli concludes that the discrepancy between fact and memory is not caused by faulty recollections but actively and creatively generated by memory and imagination in an effort to make sense of crucial events.[17] But perhaps an experience without context – a sudden bump in experience like a bump in the road that was unforeseen and without lasting consequence for those who survived – is unrelatable to other experiences and memories and soon becomes lost to memory and the current ongoing experience of those who survived.

A related issue to consider when utilizing the recollections of individuals to study previous events is that of subject maturation. Individuals continually grow and change, and those changes affect how they view events. These changes can be both long-term and short-term. Long-term changes are related to the individual growing older and arguably wiser, using life experience to mature and change future behaviors. Short-term changes are related to an individual's change of mood or immediate cause/effect reactions.[18] This maturation, or a change within studied individuals themselves, impacts how the individual views both prior and subsequent events as it changes the lens through which they view the world. Consequently, one facet of a qualitative analysis of any historical or past event is taking into consideration that people are in a state of continuing change, resulting in an ever-changing recollection of previous experiences.

This article will examine the different reactions to, and experiences of, this epidemic in North Carolina at the state, county and local business, and individual levels.

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[16] Alessandro Portelli, *The Death of Luigi Trastulli and Other Stories: Form and Meaning in Oral History* (Albany, New York: State University of New York Press, 1991), 26.
[17] Ibid., 26.
[18] Michael G. Maxfield and Earl R. Babbie, *Research Methods for Criminal Justice and Criminology, 7th Edition* (Stamford, CT: Cengage Learning, 2015), 175.

It uses archival materials, newspapers, and personal correspondence in order to explore not only the impacts felt by North Carolina's citizens at each of these levels but also how such an experience came to all but disappear from the recorded history of the state even before the epidemic had run its full course. The use of these resources will provide the foundation for the overall argument of the article. That argument is that not only was the epidemic subsumed within the historiographical narrative of World War I to rationalize the additional loss of life and emotional trauma, as both Outka, Hume, Crosby argue, but also that institutions encouraged this peculiar kind of oblivion by the citizens of North Carolina. The State Board of Health and public health officials encouraged them to silently deal with the epidemic at home and quietly deal with the epidemic at the community level through grass roots movements.

This silent struggle with such a widespread disease caused a sense of acceptance, or at least resignation, in the population; within a short period of time, influenza became absorbed into the lifestyle of North Carolinians and they very soon ceased to be shocked by it and in some ways became blinded to it. This inurement to the epidemic differed from the death or war weariness that can often manifest in societies engaged in large-scale conflict. The change in attitude was not only due to the fact that individuals resigned themselves to the horrors of the epidemic in their daily lives, it was more that they grew weary of the imposed quarantines and upheavals to their routines caused by the epidemic and began ignoring those changes. This desensitization was also encouraged by institutions that wished to suppress the presence of any weakness in society during wartime and keep the citizens focused on contributing to the war effort. In a society dealing with the absence of so many young men due to the horrors of war, North

Carolina's residents still at home were expected to buck up, deal with the epidemic as best they could, and remain thankful that they were not off fighting a war. However, as this article will illuminate, the people of North Carolina were fighting their own losing battle against raging pestilence on the home front.

THE RESPONSES OF STATE LEVEL OFFICIALS AND DEPARTMENTS

In order to understand the state level reaction to the epidemic in North Carolina, it is important to first understand the condition of the public health system at the time. The North Carolina State Board of Health was created in 1877, but this initial board was barely functional and nearly useless due to severe underfunding and the resulting lack of resources necessary to collect data and disseminate important medical information.[19] The State Board of Health was reformed in 1879 and legislature mandated that each county organize its own local board of health to maintain and distribute vaccines for infectious diseases. Legislature also mandated that the board of health start maintaining vital statistics for the state's population. Unfortunately, no enforcement of these requirements existed at the local level and the majority of county leaders refused to act.[20] In 1909, Dr. Watson S. Rankin was selected as North Carolina's first chief public health official. Under his tutelage, county level boards of health began sprouting up across the state. In 1917, Rankin and the State Board of Health created the North Carolina Bureau of County Health Work (BCHW) pilot program in ten counties to stimulate growth in rural health

[19] William P. Brandon and Lauren A. Austin. "Chapter 13: W.S. Rankin and the Creation of Public Health in North Carolina, 1909-1925," in *North Carolina during the First World War*, Edited by Shepherd W. McKinley and Steven Sabol (Knoxville: University of Tennessee Press, 2018), forthcoming.
[20] Ibid.

departments. All involved counties experienced resistance at the local level against the program, with many individuals refusing to take part in what they saw as a non-traditional approach to health care and a fight between local autonomy and centralized authority.[21] Their refusal to participate in the growth of county level boards of health and the more central State Board of Health set an unfortunate scene for North Carolina when influenza struck in 1918.

As mentioned previously, influenza was first reported in North Carolina in Wilmington on September 19, 1918.[22] Few were concerned at that time because the flu strikes every year from fall to late spring. The city's leading health official, Dr. Charles Low, assured Wilmington's citizens that the illness was nothing more than the "old fashioned grippe under a new name."[23] However, within a week the disease had become so prevalent that prominent James Walker Memorial Hospital was overrun with the sick and numerous other treatment facilities had to be opened to accommodate the influx of influenza patients.[24] In this swift and deadly way, the epidemic swept across the state.

The Response of the Governor

In the first week of October 1918, 388 North Carolinians died of influenza.[25] New Hanover County, which contains Wilmington, recorded sixty-four flu deaths that first week. Governor Thomas Bickett, who recognized that he lacked functional county boards

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[21] Cockrell, "Blessing," 312-313.
[22] Ibid., 311.
[23] *Morning Star* (Wilmington, NC), September 20, 1918. Accessed from www.newspapers.com. All newspapers in this article were accessed via www.newspapers.com unless otherwise noted. This purposive collection method is an accepted and widely used research approach in the field of public policy.
[24] Cockrell, "Blessing," 311.
[25] Author's calculations from death certificates accessed from www.ancestry.com. For more information, see Lauren A. Austin, "Falling Around Us 'As Thick as Leaves in Vallombrosa'": A Tri-Level Quantitative Analysis of North Carolina's Experience with the Influenza Epidemic of 1918-1919," 2018.

of health to help him either fight the spread of influenza or disseminate information to citizens, released a statement through the state's newspapers published on October 3, 1918. The official statement read as follows:

> The State of North Carolina is in the grip of an epidemic of grippe. The disease is invading the State from many quarters as it prevails throughout the United States, but the principal lines of invasion seem to be from the seaports of Wilmington and Norfolk. Already the disease has appeared over the entire State, being very prevalent in the East, and having established itself in a number of centers in the West. The indications are that in another week it will be generally prevalent throughout the State.
>
> The disease started in Spain in May, this year, involving 30 percent of the population of that country within a short time. Already the disease has invaded and practically passed through Europe. The rapidity with which it travels and the large percent of the population involved indicate (1) the exceptionally contagious nature of the disease, and (2) that with it public health measures have little influence. The only good fortune attending the present epidemic in North Carolina is that it will probably exhaust its supply of susceptibles before its dangerous ally, - pneumonia, arrives in force in December, January, and February.
>
> The disease is due to spit swapping. Spit is swapped or exchanged in the following ways: (a) By coughing or sneezing into the air instead of a handkerchief. In open coughing or sneezing into the air instead of into a handkerchief an invisible spray is thrown several yards into the air and floats from 30 to 60 minutes. The greater the spraying, as in psychic waves of coughing that pass through assemblages, moving picture shows, churches and other gatherings the denser and more potent to the infectious atmosphere; (2) by soiling the hands with spit – very small, invisible amounts – and transferring the spit to the hands of another person by handclasps, or by handling something, as a door knob or some article from which the second person gets the minutes [*sic*] amount of spit; (c) by using the common roller towel, contaminating and being contaminated; (d) by using common drinking dippers, common drinking cups and common spit infected water, at soda fountains. A great many soda fountains maintain a small collection of water practically hidden beneath the counter or slab where the spit germs or the town are pooled and re-distributed. Let any person, if he thinks it possible, to try and work out in his mind a more effective method for the people in a village or town to exchange spit, the very microscopic amounts necessary for this powerful contagion, than is maintained by a great many drug stores, and one will realize the infectious potency of unsterilized glasses at soda fountains.
>
> As for sterilized glasses, well how do you know they are sterilized? Take no chance. Demand a paper cup even if it costs you more.

> DONT'S [*sic*]
> 1. Don't associate with the impolite and careless, who spray you with their spit.
> 2. Don't go to unnecessary public gatherings while the epidemic is on. Put your moving picture show money in thrift stamps.
> 4. [*sic*] Don't use a roller towel.
> 5. Don't patronize a soda fountain that does not use paper cups.
>
> If you get the grippe: Go to bed and stay there until you are well, until your temperature has been normal for at least two days. If you are past 50, or if you are not strong, stay in bed 4 days after normal temperature. Remember the danger of grippe, is pneumonia. Pneumonia is the penalty for disrespect to the grippe that gets out of bed too soon.
>
> In conclusion, public officials can do little to protect you. You can do a great deal to protect yourself.[26]

This statement in its entirety is important for several reasons. First, it shows that at the time, health officials greatly underestimated the epidemiological nature of the influenza strain circulating in the fall of 1918. Governor Bickett was correct in recognizing the swift movement of the disease throughout the population due to its highly contagious nature. However, he was incorrect in the assumption that pneumonia would naturally follow influenza over the course of the next few months, acting as two loosely connected but separate diseases as it normally did during the flu season. He was also incorrect in stating that the onset of pneumonia was the result of incorrectly caring for oneself during the flu. This particular strain of influenza acted differently within its victims. Approximately 20% of the infected victims contracted a mild case and recovered without much problem. However, the other 80% of victims experienced one of two terrifying illnesses. Some victims almost immediately became deathly ill, their lungs quickly filling with fluid as they struggled to breathe. These victims died in a matter of days—sometimes even hours—with bodies ravaged by a high fever—and gasping for breath—

[26] *Alamance Gleaner* (Graham, NC), October 3, 1918.

until they lapsed into unconsciousness and then death. For the remainder of the victims, the illness initially presented as the ordinary flu complete with chills, fever, and muscle aches. However, by the fourth or fifth day of their illness pneumonia developed, filling their lungs with bacteria that either killed them or led to an exceptionally long period of convalescence.[27] In addition, at least at its beginning, this strain evidenced the extremely abnormal characteristic of targeting the healthy young adult population while the elderly aged sixty and over were the least likely to die.[28] It has taken epidemiologists decades to unravel the nature of this influenza strain, so it is no wonder that Governor Bickett disseminated incorrect information to his citizens in early October 1918.

Second, the statement is important because it shows the erroneous origins of the name "the Spanish Flu." During the spring of 1918, many countries in Europe as well as the United States and Asia experienced a flu outbreak, but only Spain, still neutral in the midst of World War I, did not censor its news reports. Thus, Spain's flu outbreak became public knowledge, whereas other countries regarded news of the devastating disease as critical intelligence to be suppressed. Consequently, the flu became speciously branded as the "Spanish Influenza."[29] It is important to note that this spring 1918 strain was nothing out of the ordinary. Whether it started in Spain, Asia, or the United States, it presented as a typical "three-day fever" of fever, aches, and pains.[30] The spring 1918 strain was highly contagious and led to many soldiers being laid up in the middle of battles, a fact which

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[27] Kolata, *Flu,* 12, 303-305; Taubenberger and David M. Morens, "1918 Influenza: The Mother of all Pandemics." *Emerging Infectious Diseases* 12:1 (January 2006), 15-22.
[28] Author's calculations from death certificates accessed from www.ancestry.com. For more information, see Austin, "Falling Around Us," 2018.
[29] Kolata, *Flu,* 10.
[30] Ibid., 9.

affected the war effort. However, it seldom led to death.[31] When summer arrived, the flu seemed to vanish, as is standard in influenza cycles. Therefore, the highly contagious and extremely fatal strain that began circulating starting in August of 1918 was a mutated strain with no definite provenance.[32]

The third important aspect of Governor Bickett's initial public statement on the influenza outbreak in October 1918 is that it constitutes as an early call for citizens to voluntarily place themselves in semi-quarantine. Despite the fact that the day before, October 2, *The News and Observer* reported that neither the state nor the national health authorities considered quarantine measures practicable,[33] the governor was encouraging people to stay at home in hopes of decreasing the circulation of the disease. This timing is important because it shows that just two weeks after the initial appearance of the flu in Wilmington on September 19, health officials had recognized that this outbreak was steadily increasing and that the mortality statistics, inconsistent as they were at the time, showed a progressive growth in the number of lives claimed by influenza. However, there was nothing in the statement to suggest to the populace at the state level that this strain was anything beyond a normal influenza cycle.

This initial public statement made by Governor Bickett turned out to be his most significant on the subject of the epidemic. Throughout its course, the governor and other state officials would encourage citizens to remember these suggestions for how to stop the spread of influenza and increasingly discouraged public gatherings. However, no

[31] Ibid., 11.
[32] Ibid., 12.
[33] *The News and Observer* (Raleigh, NC), October 2, 1918.

official statewide quarantine was ever imposed.[34] This failure to act was mainly because Governor Bickett had no way to enforce a statewide epidemic as no systematic state-based enforcement existed at the local level. In fact, state law granted local health boards significant protection and decision-making power in the event of epidemics.[35] Consequently, the decision to implement quarantines and the methods of enforcing them were pushed by the state down to the county and community levels through the use of entities such as local councils of defense and boards of health, both of which will be discussed when attention is turned to county and local institutions.

The Response of the State Capitol's Newspaper

Shockingly, the nationally influential state's newspaper of record, Raleigh's *The News and Observer*, did not even print the Governor's statement on October 3, 1918. Many local papers, such as the *Alamance Gleaner*, published the statement in its entirety, but the state newspaper did not. For the first few weeks of the epidemic *The News and Observer*, whose publisher served as President Wilson's Secretary of the Navy throughout the war, seemed to focus mainly on the epidemic as it pertained to the military. On October 3, *The News and Observer* published the headline "Camp 'Flu' Cases Show Decrease" while the sub-headline stated that. "Disease, However, is Rapidly

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[34] Research does not show that any state imposed a statewide quarantine during the 1918 epidemic. The closest mandate to a state quarantine order came from both the Illinois and New York State Health Departments. These departments ordered that influenza patients be quarantined until all clinical manifestations of the illness subsided (for more information see "Quarantine and Isolation in Influenza," *The Journal of American Medical Association* 71:15 (October 12, 1918): 1220). The members of the American Public Health Association (APHA) agreed, stating that patients with influenza should be kept in isolation and that because of strain of facilities, only severe cases were to be hospitalized while mild influenza patients were to remain at home. The APHA also supported institutional quarantine to protect people from the outside world in establishments such as asylums and colleges (for more information see "Influenza: Report of a Special Committee of the American Public Health Association," *The Journal of American Medical Association* 71:25 (December 21, 1918), 2068-2073).

[35] Karen L. Zipf. "In Defense of the Nation: Syphilis, North Carolina's 'Girl Problem,' and World War I." *The North Carolina Historical Review* 89:3 (July 2012), 276-300.

Spreading Among Civilian Population Over Country."[36] Interestingly, the article seminated from Washington, D.C. and, aside from the sub-headline, did not discuss the spread of influenza throughout either North Carolina or Raleigh itself. On October 4, 1918, *The News and Observer* again reported that there was a "Light Decrease in Cases of Influenza" but yet again the article was based out of Washington, D.C. and mainly addressed the outbreak as it pertained to army camps. Examination of the front pages of *The News and Observer* for the remainder of the first week of October 1918 shows that the majority of the published stories pertained to the impact of the flu on the soldiers in army camps but not on the citizens of North Carolina. Smaller articles published further back in the newspaper discussed school closures and quarantines in other parts of the state but the main headlines on the front page focused mainly on the war effort, demonstrating the priorities of the newspaper regarding information dissemination at the time.[37]

By the end of the first week of October 1918, the state newspaper began to publish more stories on the local impact of the outbreak while still failing to relate to the public the intensity and gravity of the epidemic. On October 8, *The News and Observer* published a story datelined from Washington, D.C. which acknowledged the ongoing fight of the Red Cross against the epidemic. It stated that, "In a further effort to curb the

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[36] *The News and Observer* (Raleigh, NC), October 3, 1918.

[37] The *News and Observer* was purchased in 1894 by North Carolina native and prominent journalist/editor Josephus Daniels. At this point, *The News and Observer* was merged with the *State Chronicle* and the *North Carolinian*. A progressive Democrat, Daniels refocused the paper to become a leading "New South" political commentary. Daniels was appointed to Secretary of the Navy by Woodrow Wilson, a position he held from 1913-1921. He was also a member of the Democratic Executive Committee. Daniels used his newspaper to promote support for public schools, public works, more regulation of trusts and railroads, as well as prohibition and women's suffrage. After the epidemic, Daniels became a trustee at the University of North Carolina at Chapel Hill and was a strong supporter of Franklin Delano Roosevelt, under whom he served as ambassador to Mexico from 1943-1941. North Carolina History. "Josephus Daniels (1862-1948)." http://northcarolinahistory.org/encyclopedia/josephus-daniels-1862-1948/

spread of the disease Surgeon General Blue of the Public Health Service, today suggested to all State health officers that schools and places of amusements be closed and public meeting discontinued in all places where the malady becomes prevalent."[38] However, any information on the local state of the disease was relegated to page two in a story that gave seemingly conflicting information. In an article headlined, "Influenza Here Still Spreading," *The News and Observer* notes that, "The increase of the epidemic of influenza among the soldiers at Camp Polk and the outbreak of a number of cases at Shaw University… along with several reports of new cases in various parts of the city yesterday served to emphasize the spread of the epidemic in Raleigh rather than to denote any general decrease in the city." However, the same article goes on to conclude that, "In Rex Hospital… favorable reports were made by attending physicians on all cases," and that "the situation at State College showed marked improvement yesterday."[39] Any reader of the paper looking for clarification on the state of the epidemic in and around North Carolina's capital would be greatly confused based on the information disseminated by the state's most influential newspaper.

On October 9 and October 10, 1918, the newspaper published a small declaration at the bottom of page one which stated: "To prevent the spread of Spanish influenza sneeze, cough, or expectorate (if you must) in your handkerchief. **You are in no danger if everyone heeds this warning** [*sic*]**.**"[40] Not only was this statement incorrect regarding the ease with which the influenza was spreading among the populace in the fall of 1918, but the use of bold font to assure the citizenry that they were under no danger if they

[38] *The News and Observer* (Raleigh, NC), October 8, 1918.
[39] Ibid.
[40] Ibid., October 9, 1918.

stayed away from spittle was a blatant attempt to soothe the populace regarding their immediate danger.

An examination of the headlines for *The News and Observer* for the remainder of the month of October 1918, the month which proved to be the height of the epidemic in North Carolina, showed similar coverage of the epidemic to that of the first week of the month. Approximately 95% of the headlines on the front page of the paper addressed the war effort, leaving a glaring absence of major headlines about influenza. On October 21, the state newspaper published a front-page article datelined from Washington, D.C. headlined, "Keep Clean, Get Plenty Fresh Air: Gargle and Avoid Drafts and Overheat, To Escape Ravages of Flu." The article related that,

> State executive committees, county representatives of the volunteer medical service corps of the Council of Nation Defense were urged today by Dr. E. P. Davis, president of the corps, to cooperate fully with local, State, and national boards of health in fighting the Spanish influenza epidemic. They were advised particularly not to do surgical operations unless absolutely necessary to save life.
>
> The representatives were asked to impress upon people the necessity of cleanliness, the importance of fresh air, the avoidance of chill and overheat and to gargle and spray the nose and throat with an alkaline antiseptic fluid frequently.
>
> Doctors were also urged to give no medicine and use no treatment which may depress the vital forces, especially the heart of the patient.
>
> The Spanish influenza epidemic in Washington has passed its peak. New cases reported today were 705 compared with 835 yesterday, and deaths were 54 against 66 the day before. The total deaths in Washington from influenza and pneumonia now is 1,087.[41]

A North Carolina citizen reading the state newspaper's main headlines in order to learn what they need to do to survive the influenza epidemic would come away from reading

[41] Ibid., October 21, 1918.

this article with the impression that the epidemic was subsiding and that if they only kept clean, kept their temperature regulated, and used throat spray, then they could avoid catching the flu.[42] More than one month into the epidemic and the state newspaper was still seemingly downplaying the gravity of the disease in the face of the ongoing war effort.

Throughout the remainder of October, *The News and Observer* continued to provide conflicting stories from one day to the next on their front pages. On October 22, a frontpage headline read "Flu Situation the Country Over: Not Encouraging,"[43] but on the very next day the front page declared "Flu Conditions On The Whole Better: Gradual Abatement."[44] The statement that the flu situation across the nation was improving and the insinuation that the same was true of North Carolina was untrue; between October 14 and October 21, 3,301 flu deaths were recorded in the state.[45] This signaled a sharp increase from the 388 flu deaths reported during the first week of October. The remainder of the month saw an additional 2,463 individuals die of the flu in North Carolina. Altogether, 6,152 individuals died of influenza during October 1918 in North Carolina.[46]

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[42] It is interesting to note that in none of the lists of ways to prevent catching influenza or caring for one's self during the epidemic is handwashing specifically mentioned. There are references to keeping clean in general but not specifically with regards to one's hands. While handwashing with soap and water has been considered a measure of personal hygiene for centuries, it was not until the 1980s that an evolution of concepts of hand hygiene in health care occurred. The first national hand hygiene guidelines were published in the 1980s followed by several others in more recent years in different counties. For more information see, "WHO Guidelines on Hand Hygiene in Health Care: First Global Patient Safety Challenge Clean Care Is Safer Care." Geneva: World Health Organization; 2009. 4, Historical perspective on hand hygiene in health care. https://www.ncbi.nlm.nih.gov/books/NBK144018/

[43] *The News and Observer* (Raleigh, NC), October 22, 1918.

[44] Ibid., October 23, 1918.

[45] Author's calculations from death certificates accessed from www.ancestry.com. For more information, see Austin, "Falling Around Us," 2018.

[46] Ibid.

Why then was the state newspaper not reporting the epidemic as the widespread pestilence and catastrophe that it was?

Further examination of the front pages of *The News and Observer* show that after October 23, 1918, the number of headline articles regarding the epidemic declined even more. Other than a funeral notice printed on October 27 regarding the death of forty-two-year-old Edward Kidder Graham, the President of the University of North Carolina, from influenza-related pneumonia,[47] the state newspaper printed no further frontpage influenza articles as the nation marched its way towards an armistice. This finding lends credence to the arguments of Elizabeth Outka, Janice Hume, and Alfred Crosby that in some ways, the epidemic became absorbed into the story of the end of World War I, that it was easier for individuals to process the magnitude of each calamity if they did so as one event. Certainly, it is evident through examination of *The News and Observer* front pages that the closer the nation came to war's end, the less open discussion of the epidemic was apparent.

However, it is also evident that at both the national and state level, individuals were clearly told to not panic over the epidemic. There was a pervasive feeling of placation and calming instructions being sent out from the top levels of government. Page eight of the October 21, 1918 *News and Observer* states that "the State health authorities are insisting that this is no time for useless and hysterical panic," and that they had plans

[47] Less well-known is that not only did UNC Chapel Hill president Edward Kidder Graham die of influenza in October 1918, but his successor died during the epidemic as well. Marvin Hendrix Stacy served as acting president of UNC Chapel Hill from Graham's death on October 26, 1918 until his own death at age forty-one from influenza on January 21, 1919. The University of North Carolina at Chapel Hill, "Marvin Hendrix Stacy, 1877-1919." *The University of North Carolina Record* 163 (March 1919), 1-22.

in place for local organization.[48] The article goes on to again assure its readers that, "there is no cause for panic" and to chastise those who have "greatly hindered" local organizations in their work "by the ignorant, unfounded, and exaggerated scare of the disease which exists so generally among the people." The article relates that Governor Bickett met with the State Superintendent of Public Instruction James Y. Joyner, State Health Officer W. S. Rankin, and Colonel Charles W. Stiles from the United States Public Health Service on Sunday, October 20 to discuss the "seriousness of the situation and the immediate need for desperate and organized resistance on the part of each community."[49] The conference resulted in the following facts being agreed upon and disseminated to the public concerning action at the state level to fight the epidemic:

1. There exists within the state a deficient number of medical and nursing professionals to deal with the influenza victims, either because they were serving in the war or they had already succumbed to influenza themselves. The state can offer no further help.

2. The communities and citizens must depend upon themselves more than ever before, since they can expect little to no aid from elsewhere. The sooner the public realizes that no help is coming, the sooner they can start taking care of themselves.

3. Communities, whether already infected with influenza or not, should (a) make sure that all females in every family learn how to nurse influenza patients, (b) provide free nursing instruction at the public schools, (c) tell each individual through house-to-house visits by prominent citizens and ministers that influenza is spread by coughing and sneezing, (d) requiring each sick person to remain at home in bed, preferably on the porch and in the sunshine, (e) avoid congregating unnecessarily in houses, on the streets and elsewhere, although people should remember that there is no danger in nursing the sick if precautions are taken, and (f) remind people to not hire private nurses or otherwise monopolize a doctor's time with an individual case. *Nurses and doctors are for communities and not for individual cases.*

[48] *The News and Observer* (Raleigh, NC), October 21, 1918.
[49] Ibid.

4. Local community officials, including county commissioners and mayors, were responsible for the health of their citizens. The state could not be responsible for the populace.

5. The public is warned that this is a time for calm, energetic work and not for a thoughtless, useless, and hysterical panic. There is no excuse for a panic, but all persons must be willing to work hard under the direction of their local organization if the best results are to be obtained.[50]

This directive, published at the height of the epidemic, makes it abundantly clear that at the state level, no help could be given, and no help should be expected. Indeed, both national and state officials recognized as early as October 11 that even though the epidemic was a national catastrophe, help would have to come at the local level. United States Surgeon General Rupert Blue wrote to W. S. Rankin on that date that, "at this moment of national need… [citizens should] endeavor to organize local available resources."[51] Rankin consistently received requests for state level support and consistently reminded those local officials who asked that there was, "No nurse available. You should insist on community organization as advised."[52] Rankin not only had no medical personnel to distribute, he also had no system in place to disseminate either information or assistance of any other kind.

The fact that the state newspaper increasingly declined to print news regarding the growing epidemic on the front page and that directives from Governor Bickett in conjunction with the state's chief public health officer and a representative from the Public Health Service were pushed all the way to the last page of the newspaper behind

[50] Ibid.
[51] Rupert Blue to Watson Smith Rankin, October 11, 1918, Correspondence, 1918, Records of the State Board of Health, State Archives, Division of Archives and History, Raleigh, NC.
[52] Watson Smith Rankin to W.J. Middleton, November 4, 1918, Correspondence, 1918, Records of the State Board of Health.

advertisements for war bonds and shoe polish, highlights the argument that at the state and even the national level, officials and those in charge of disseminating information generally only encouraged citizens to keep calm and soldier on. This is made evident from the fact that according to statements released from the Governor's office and from the office of W.S. Rankin, the only action that the state could take was to push calm behavior and organization at the community level; no official quarantine was ever levied in North Carolina or any other state. Citizens were repeatedly told by the highest officials of the state that they could get "no help" from their elected officials and should therefore "not panic" and simply buckle down to get the job done themselves, all the while being constantly reminded that after all, there was a war going on.

The Response of the State Council of Defense

Another example of a state level organization pushing the response to the influenza epidemic down to the local level is that of the North Carolina State Council of Defense. The State Council was appointed by Governor Bickett in May 1917. Its purpose was to investigate and advise the government on the problems associated with economic mobilization during the war. Dr. Daniel Harvey Hill, president of the State Historical Commission, was chosen as chairman.[53] Tentative chairmen for ninety-nine of the one-hundred North Carolina counties were chosen following the May 31, 1917 meeting of the

[53] Daniel Harvey Hill, Jr. was the son of Isabella Morrison and Daniel Harvey Hill. His father was a lieutenant general of the Confederate Army, president of Arkansas Industrial University and of the Georgia Military and Agricultural College, as well as a mathematics teacher at Davidson College. D.H. Hill, Jr. received Bachelor of Arts, Master of Arts, and Doctor of Literature degrees from Davidson College. He received a Doctor of Law degree from UNC Chapel Hill in 1910. He served as the president of North Carolina State University from 1908 until 1916. Hill was a member of the North Carolina Historical Commission from 1904 until his death in 1924. He also served as president of the North Carolina Folklore Society, the North Carolina Teachers Assembly, and the North Carolina Literary and Historical Association. I.T. Littleton. "Hill, Daniel Harvey, Jr." *Dictionary of North Carolina Biography* (Chapel Hill: University of North Carolina Press, 1988). https://www.ncpedia.org/biography/hill-daniel-harvey-jr

State Council.[54] During the epidemic, Hill mobilized the resources of the county councils behind the county officials.[55] The scarcity of doctors and nurses made rapid and efficient organization across the state imperative. However, as seen previously in this article, the state lacked such a system of organization. Consequently, after releasing his initial statement regarding the epidemic to the press on October 3, 1918, Governor Bickett began reissuing the warning in the form of telegrams sent to each county's council. Also, State Chairman Hill urged each council that every step "for an organized campaign should be quietly made before sickness comes."[56] He also encouraged the advance selection for emergency hospitals in all counties.[57] Letters from Clarkton, North Carolina (located in the Coastal Plain Region) show that local councils of defense may have been remiss in this duty or not acted quickly enough. Two young men in Clarkton who were friends were taken ill with influenza the same day, died the same day, and were taken to the cemetery in the same hearse. Then in the home of one, his mother, two sisters, and three brothers became violently ill with the flu. A friend of their family named Clarence Clark "came up with his hospital proposition… which has saved many lives." The temporary hospital proposed by Clark was in a schoolhouse, classes having been suspended by the Bladen County Board of Health due to the epidemic. Clark's father wrote to a friend that, "It did make me proud to see Clarence as he came to hospital with

[54] William J. Breen, "The North Carolina Council of Defense during World War I, 1917-1918." *The North Carolina Historical Review* 50:1 (January 1973), 1-31. No one in Carteret County was willing to be appointed chairman of the local council.
[55] Ibid., 24.
[56] Dr. Daniel Hill to County Council Chairman, October 5, 1918, North Carolina Council of Defense Records, Box 28.
[57] Ibid., October 15, 1918.

his patients (men, women, and children) and take them in his strong arms and put them in their beds, then go for others… Of all treated there has not been a death."[58]

In the face of inaction from the State Council, the mobilization of the county councils was undoubtedly a relief to the citizens. However, the councils were in place due to the war; once armistice was reached in November 1918, the councils began to disband both from lack of need but largely because no councilmember at either the state or local level was ever paid since the North Carolina General Assembly did not meet during the state's involvement in World War I.[59] The councils were effective in providing assistance fighting the influenza epidemic in September and October 1918, especially since they often worked in tandem with local boards of health to make decisions and dispense assistance. However, starting in November the councils were gradually removed from public conscience as they disbanded and there were few groups left to carry on their work against the influenza.

The Response of the National Public Health Reports

In case the citizens of North Carolina did not fully understand the depths to which they were largely on their own in dealing with the pestilence invading their towns, communities, and homes through the information given to them through the state newspaper, they had other avenues available for coming to this conclusion. The *Public Health Reports* has been published since 1878 by the Association of Schools and Programs of Public Health on behalf of the United States Public Health Service. In the

[58] Letter from Mr. Clark to friend. Undated. Sarah McCulloch Lemmon, *North Carolina's Role in the First World War* (Raleigh: North Carolina Department of Cultural Resources, Division of Archives and History, 1975), 36.
[59] Breen, "The North Carolina Council of Defense," 3-4.

Public Health Reports published on October 11, 1918, the Department of Health and Sanitation published the following instructions written by a surgeon from the United States Public Health Service on how to avoid the influenza epidemic and prevent its spread:

1. Avoid needless crowding. Walking to work, if you have the time, is better than riding in a crowded car.

2. Stay in the open air and in the sunshine as much as you can.

3. Breathe clean air and plenty of it. Breathe through your nose. Keep windows open when you sleep and, if practicable where you work.

4. Use plenty of covering to keep warm while you sleep and loose-fitting clothes to keep you comfortable while you are awake. Keep your feet dry and warm.

5. Avoid coughing, sneezing, or snuffling persons and do not cough or sneeze on others. If necessarily attending the sick, wear a gauze mask over the nose and mouth. Wash your hands thoroughly after handling a person sick with grip [*sic*] and after handling anything… of an infected person.

6. Wash your hands thoroughly immediately before eating and do not put your fingers in your mouth or nose.

7. Don't use a napkin, towel, spoon, fork, glass, or cup which has been used by another person and not washed.

8. Keep away from houses where there are influenza cases unless necessary for you to visit them.

9. Keep up your general health (1) by using, inside and outside, plenty of clean water, (2) by eating clean, wholesome food, (3) by sleeping at least seven hours out of each 24 hours, (4) by keeping the bowels regular, and (5) by temperance. Clean pasteurized milk and clean lemonade are good antigrip drinks, while alcoholic drinks ("booze") may make you subject to the disease.

10. Buck Up. Be cheerful. We'll get over the grip trouble just as we will over every other obstacle on our road to Berlin.[60]

[60] "Weekly Reports for October 11, 1918." *Public Health Reports* 33.41 (1918): 1729–1762.

In other words, Americans were encouraged to not complain about the epidemic; they were encouraged to be as strong and brave in the face of this domestic terror as they were about the war raging in Europe. Certainly, they were not allowed to be more fearful of influenza than they were the war itself.

The *Public Health Reports* published on October 18, 1918 also discouraged citizens from making "unnecessary calls on the overworked physicians." They stated that "physicians everywhere have complained of the large number of unnecessary calls they have been compelled to make" because the general citizenry could not determine when a doctor was needed and when home care would suffice. The article encouraged people to care for their own sick by putting those afflicted to bed, dose them with castor oil, clear the room of all unnecessary furniture, burn used cough or sneeze cloths, feed the patient bland food, keep the room well-ventilated, quiet, and cool, keep the linens fresh, keep the patient clean, combed, and bundled up. However, the report also acknowledged that the epidemic was serious and that individuals should remember that "if in doubt, call the doctor."[61] These same sentiments were echoed in the joint release from Bickett, Joyner, Rankin, and Stiles on October 21 in *The News and Observer*. Citizens were constantly reminded to not call the doctor unless it was a true emergency, but at the same time were instructed that the epidemic was indeed serious in nature and should be approached as such.

[61] "Weekly Reports for October 18, 1918." *Public Health Reports* 33.42 (1918): 1763–1815.

The Response of the State's Health Bulletin

This conflicting information disseminated in national level health publications trickled down to those at the state level as well. *The Health Bulletin* was a magazine published monthly by the North Carolina State Board of Health from April 1886 until 1973 and distributed free to any citizen of the State upon request. Other than newspapers, *The Health Bulletin* was one of the main ways that citizens received information about the state of public health affairs within North Carolina. However, the *Bulletin* did not publish any information regarding the influenza epidemic until the November 1918 edition. When it did finally address the epidemic, it seemed to only mirror the instructions given to the public the previous month in the national *Public Health Reports*. The November 1918 *Health Bulletin* states that influenza is spread by careless spitting, coughing, sneezing, sharing dirty utensils, and by congregating in crowds and public gatherings. The *Bulletin* suggested that to keep from taking influenza, citizens should:

1. Keep away from crowds.
2. Avoid people who cough, sneeze, and spit without… a handkerchief
3. Do not use common drinking cups or towels, and keep away from the soda fountain that does not supply individual cups and sterilized spoons.
4. Keep the bowels open. Snuff Vaseline up the nose three times a day. Gargle mouth and throat with warm salt water. Sleep and eat regularly.
5. Keep in the open air and sunshine as much as possible and have good ventilation in the home and office. Sleep with your windows open.
6. Wash your hands before eating, and never put your unwashed hands in your mouth.

7. Do not give the disease to others – always bow the head and cover both nose and mouth with a handkerchief.[62]

The list published in this edition of *The Health Bulletin* is obviously a truncated version of the advice published in the *Public Health Reports* on October 4, 1918. Also similarly, the *Bulletin* instructed those who came down with the flu to go to bed at once, send for a doctor, stay in bed with plenty of bedcovers in well-ventilated room, empty the room, eat bland food and drink milk, and stay in bed at least four days after being free of fever.[63] While the state's *Bulletin* did not expressly tell its citizens to "buck up" and "be cheerful" in the face of widespread pestilence as did the national *Public Health Reports,* the *Bulletin* did instruct North Carolina citizens:

1. Do not become unduly alarmed during the epidemic – use judgement and common sense.

2. Be sure and help those who cannot help themselves. If precautions are taken, it is not dangerous to care for the sick. During an influenza epidemic the dangerous fellow is not the sick-in-bed, but the one who goes about coughing, sneezing, and spitting in a careless manner.[64]

Even as late in the epidemic as November 1918, the State Board of Health was informing citizens that they had nothing to fear if they used handkerchiefs and did not get spat upon. From the state level, there were no edicts of quarantine or directives of safety, especially not as October ended and the United States turned towards the end of the war. Again, this lack was largely because state level health officials did not have systems in place to implement or enforce quarantines throughout the state.[65] This lack meant that all control

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[62] "Influenza and What You Should Know About It," *The Health Bulletin* 33:5 (November 1918), 38-39.
[63] Ibid.
[64] Ibid.
[65] Cockrell, "Blessing," 313. The closest thing that Governor Bickett had to a statewide system was that of the local councils of defense. However, these councils were not enforcement agencies but rather war mobilization organizations that largely disappeared after the war ended.

of the spread of the epidemic was left in the hands of the county boards of health, communities, and the citizens themselves. However, could this also have been because North Carolinians were changing their view of the ongoing epidemic as the nation turned towards a time of peace and what they hopefully saw as a return to normality?

After the war ended on November 11, 1918, no further mention of influenza was made in any *Health Bulletin* magazine during the remainder of the epidemic except for an editorial published in January 1919. This editorial is eye-opening in displaying how health professionals viewed the epidemic immediately before and after the end of the war, published at a time when the death toll from the disease was still rising. In this allegorical editorial, the author creates a hypothetical situation in which Satan becomes bored with his efforts in Europe, observing that "war is in disrepute and I fear we have had too much of it."[66] He therefore decides to unleash an influenza epidemic on the world to create additional chaos. He called upon the insatiably greedy and inhumane Shylock[67] to entrust him with the job of spreading the disease throughout America since Americans "dote on personal liberty" and "won't consent to restrictions which cause a loss of money."[68]

However, Shylock reported that his initial efforts in September and October failed because "the spirit of service had gone abroad over the land." He reported that "the war had taught the lesson of cooperation, and the people soon organized." Volunteer efforts abounded, victims had been fed and cared for, businesses had closed, and precautions had

[66] "Allegorically Speaking," *The Health Bulletin* 33:7 (January 1919), 1-4.
[67] Shylock refers to the Jewish moneylender antagonist in William Shakespeare's play, "The Merchant of Venice."
[68] "Allegorically Speaking," 1-4.

been enforced. He stated that "cooperation was great and successful and the spirit of service blazed into full flame and never before had there existed such a feeling of brotherhood. In fact, people had begun to say that the epidemic had been worth all it had cost since it created sympathy and understanding and dissolved class distinctions."[69] Shylock's failure displeased Satan and the devil demanded another trial. Shylock agreed since the war was ending and assured Satan that by New Year's, the epidemic outcome in North Carolina would be very different.

True to his word, by New Year's Eve, Shylock had produced a change within the populace of North Carolina. He reported that in November and December, the people of North Carolina were "no longer organized to control the disease; there was 'business as usual,' picture shows and theatres were running at full blast, stores and streets were crowded, trains were congested, churches were open, and no community precautions were being observed."[70] Satan asked Shylock why there had been a different reaction in November and December than there had been in September and October. Shylock replied that "Times were dull then, but there is holiday trade now and profits are greater. Also… the epidemic has become common and is not so much feared." When pressed for details, Shylock revealed that he had forced a few leading merchants to realize how much money they were losing during the quarantines and they pushed the chambers of commerce and business associations into pressuring the boards of health and public health officials into backing down on their regulations. He then explained that he lessened people's overall

[69] "Allegorically Speaking," 1-4.
[70] "Allegorically Speaking," 1-4. An example of this is the role that the county councils of defense played in mobilizing help in September and October 1918 but their lack of presence during the remainder of the epidemic. Their dissolution is one more example of the way in which the state quickly got back to "business as usual" as soon as possible after the war.

fear of the epidemic by having the same leading merchants contact the newspapers and threaten to withdraw all advertising if they did not cease to print warnings against shopping in crowded stores. Consequently, published warnings against attending crowded stores and shows stopped "in short order."[71]

A supporting example of this seeming collusion between the boards of health and local interests referenced by Shylock in January 1919 is that of the fall election of 1918. In a letter dated October 29,1918, Thomas Warren, Chairman of the State Executive Democratic Committee, wrote to the Honorable Claude Kitchin, a Democratic Congressional Representative from North Carolina, that:

> Owing to the large absent vote and the panicky conditions in the rural Districts, due to the influenza epidemic, it is necessary for us to get out every Democratic voter possible. I certainly hope you will be able to run down to your district for a few days at least and stir the boys up. I hope you will be also be able to write a number of personal letters in your District, urging the people to vote.[72]

This letter shows that politicians were anxious about the election turnout because of the epidemic, especially considering that for weeks state officials had been urging citizens to remain at home and not mingle together. To help counteract the possibility of an extremely low voter turnout, the State Board of Health released a statement on November 1, 1918 concerning voting. *The Charlotte Observer*'s account of that statement reported that:

> The State Board of Health has advised the people of North Carolina that there is no need for staying away from the polls on account of influenza. It is set forth that this is a "crowd disease," and no danger will be incurred in going out to vote. There should be no congregation of crowds around the polling places, and if the

[71] "Allegorically Speaking," 1-4.
[72] Letter from Mr. Thomas D. Warren to the Honorable Claude Kitchin, October 29, 1918. Claude Kitchin Papers, #406, Folder 475, Southern Historical Collection, The Wilson Library, University of North Carolina at Chapel Hill.

> voters will go there, deposit their ballots and go their separate ways, the influenza will have no sort of a show to get in its work. One may go to the polls and cast his ballot with the same assurance of safety that he may go about any other errand. In giving out this advice, the State Board of Health has done a sensible thing, and one which is calculated to allay many of the silly fears that have swayed the people in recent weeks.[73]

Despite routinely telling its citizens to avoid unnecessary crowding, the State Board of Health was now telling citizens to stop being "silly" and to get out and vote on November 5, 1918 in spite of the fact that the epidemic had killed approximately 2,410 North Carolinians the previous week. This confusing back and forth of conflicting information clearly confused citizens because, as feared, the voter turnout was low. J.T. Heath, the Clerk of Superior Court of Lenoir County, wrote to the Honorable Claude Kitchin on November 6, 1918:

> My Dear Sir - Kindly allow me with all the sincerity one can possess to congratulate you. Old Lenoir did her part. We went well 'over the top,' which has been our custom for many years. On account of a great epidemic in this County the vote was light, but, as compared with the vote other Counties [*sic*], and the Republican vote of this County, we should not complain."[74]

The State Board of Health's involvement in the rate of voter turnout seems out of character and relatively strange, adding support to Shylock's argument that towards the end of October and early November 1918, a change in how the epidemic was viewed began to occur, with collusion occurring between government officials and departments at both the state and local level, as well as between official offices and the needs of prominent influential citizens such as merchants and politicians.

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[73] *The Charlotte Observer* (Charlotte, NC), November 1, 1918.
[74] Letter from Mr. J.T. Heath to the Honorable Claude Kitchin, November 6, 1918. Claude Kitchin Papers, #406, Folder 475.

While the allegorical editorial in the *Health Bulletin* written by someone known only as B.E.W. is subjective and hypothetical, it nonetheless clearly outlines the way in which the broader responses to the epidemic were seemingly manipulated and orchestrated, especially in the late fall and early winter of 1918. In the face of the jubilation provided by the end of the war, the impending joy of the upcoming holiday season, and the lack of a systematic public health system capable of providing consistent help at the state level, not to mention the fact that the epidemic came to be considered "common" even as early as late October 1918, the state seemed to have little to say regarding the continuance of the epidemic. This editorial allegory published in January 1919, constituted the *Bulletin's* only mention of the epidemic between December 1918 and October 1919. It seems to have been intended to serve as a quiet yet somewhat pointed reminder to county level governments and boards of health, as well as individual citizens, that the epidemic was still ongoing and was serious enough to not be forgotten as much and as quickly as it had been. It was a reminder that the state had firmly pushed the epidemic into the hands of the communities and citizens in October 1918 and they had seemingly dropped the ball with their task. No sooner had the war ended than the influenza epidemic was pushed aside, despite the fact that it was still killing thousands of North Carolinians.[75] Let us turn now to a discussion of the epidemic experience and response at the county and local business level to better understand how the influenza was in some ways forgotten by those entities.

[75] Approximately 7,000 North Carolinians lost their lives to the influenza from November 1918 through March 1919. This number was calculated from Author's analysis of death certificates accessed from www.ancestry.com and from W.S. Rankin, "Annual Report of the North Carolina State Board of Health, 1919." (Raleigh: Edward & Broughton Printing Company, 1919), 350.

THE RESPONSES OF LOCAL AND COMMUNITY-LEVEL OFFICIALS AND DEPARTMENTS

While the Surgeon General of the United States, Rupert Blue, and the national Public Health Service may initially have thought the fall 1918 influenza strain to be just another cycle of the typical influenza seen annually, the federal officials quickly realized this was not the case. They accepted that quarantine, isolation, bans on public gatherings, and the closing of churches, theaters, saloons, and other such places were necessary to stop the spread. However, they lacked the power to make their recommendations mandatory. Even at the state level, the North Carolina Board of Health lacked the authority to mandate statewide regulations. As previously explained, many counties within North Carolina balked at the idea of establishing a local health institution that answered to the higher central authority of the State Board of Health. This war of control between local autonomy and centralized authority, especially in largely rural areas such as North Carolina, is no surprise. The Civil War, that great fight between state's rights and federal authority, was only fifty-three years past and many southern rural areas were still trying to come to terms with the expanding nature of federal and state bureaucracies occurring at the time.[76] Consequently, as seen above, the nation and the state had to push

[76] Directly before U.S. entry into World War I, United States federal government spending totaled less than 2% of the country's GNP. The federal government was involved in railroad rates and antitrust suits but little else economically. For most citizens, it was remote and unimportant to daily lives. Once the U.S. entered the war, the federal government expanded enormously in size, scope, and power. Extensive changes were wrought within the nation's political and social spheres. The Socialist Party split permanently due to conflicting support of the war; labor was granted permission to organize but was also checked as a political force; civil liberties were undermined; and consumerism was born. Business, protective of its own interests, and government, determined to enlist those interests to secure food, fuel, transportation, intermixed with each other. Both businessmen and government officials were ambiguous and uncertain about expanding state control over the economy. Federal Liberty Bonds dominated financial markets. This quick and widespread growth of the federal government in the eighteen months that the United States was active in World War I was jarring to many citizens. For more information see Christopher Capozzola, *Uncle Sam Wants You: World War I and the Making of the Modern American Citizen.* Oxford: Oxford

the control of the influenza epidemic to the county and community level. Unfortunately, in many instances, this local control was as disjointed and conflicting as it was at the higher levels of government.

The Differing Responses of City and Town Newspapers

An examination of newspaper coverage of the epidemic in North Carolina from September 19, 1918 to March 31, 1919 (the accepted span of the deadly epidemic strain) at www.newspapers.com shows 14,509 print references to influenza in newspapers throughout the state. The newspaper that referenced influenza the most during this period was *The Charlotte Observer* with 1,277 total mentions, closely followed by the *Greensboro Daily News* with 1,272 mentions, *The Charlotte News* with 1,050 mentions, *The Wilmington Morning Star* with 879 mentions, and the *News and Observer* (Raleigh) with 822 mentions. The newspapers with the least coverage of the epidemic were the *Henderson Daily Dispatch* and *The Yellow-Jacket* (Moravian Falls) with two references each, the *Roanoke Beacon* (Plymouth) with three references, *The Newton Enterprise* and *The Wilmington Dispatch* with five references each, and *The Durham Sun* and the *Everything* (Greensboro) with seven references each.

In looking at why certain newspapers did not mention the flu frequently some answers are obvious. The *Henderson Daily Dispatch* was only published on September 30, 1918 during the study period, which explains their lack of coverage.[77] *The Durham*

University Press, 2010 and David M. Kennedy, *Over Here: The First World War and American Society, 25th Anniversary Edition.* Oxford, Oxford University Press, 2004.

[77] The database www.newspapers.com was chosen as the search tool for newspapers from the study period as it is the largest compiled database of newspapers both nationally and statewide. Therefore, for the purpose of this article, newspapers are only considered published if they are archived in the www.newspapers.com database. While other dates may have been published and not archived, that information is beyond the scope of this article.

Sun and the *Everything* were also sporadically published during the examined period. *The Yellow-Jacket* was published on the first of every month for each month during the period, but it did not seem to include coverage of the epidemic in its community of Moravian Falls. Its only references to the disease was a poem printed on November 1, 1918: "Among the boys that came to school was little Joe McKenzie, He opened up his grip outside and in flew influenza,"[78] and a "paragraphic punch" printed on December 1 that read: "Like the influenza, the bolsheviki seems to be traveling west. It's a good thing to keep a gas mask handy."[79] This lack of coverage can mostly be explained by the fact that during the study period, the county in which Moravian Falls is located, Wilkes County, lost a total of twenty-seven citizens to the epidemic in October 1918 and thirty-five in March 1919.[80] Located in the Mountain region of North Carolina, Wilkes County and other mountain counties experienced some level of protection during the epidemic and, while their losses were felt keenly and their experience should not be dismissed, they did not encounter the abnormally high levels of mortality found in other counties.[81]

Specialty newspapers were also published during the study period, with publications aimed towards certain occupations. One such publication was *The Progressive Farmer*, the Eastern Edition of which was published out of Raleigh, North Carolina. This weekly newspaper was touted as a "farm and home weekly for the Carolinas, Virginia, Georgia, and Florida."[82] An examination of *The Progressive Farmer*

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[78] *The Yellow-Jacket* (Moravian Falls, NC), November 1, 1918
[79] Ibid., December 1, 1918
[80] Author's calculations from death certificates accessed from www.ancestry.com. For more information, see Austin, "Falling Around Us," 2018.
[81] Ibid.
[82] *The Progressive Farmer* was founded by Populist Leonidas L. Polk in 1886. Polk was expected to be the Populist Party presidential nominee but died unexpectedly on June 11, 1892. From Polk's death until 1899 the newspaper was managed by John L. Ramsey of Statesville, NC. At that time, Clarence H. Poe was appointed editor at the age of eighteen, a position he held until his death in 1964. During World War I and

during the study period shows that even specialty publications aimed at lifestyles instead of a certain resident population did not vary greatly in their coverage of the epidemic, providing what can be described as limited coverage. No mention of the epidemic was made in *The Progressive Farmer* prior to October 19,1918, which is surprising given its prevalence across the state in the weeks prior. October 19, 1918 the *Farmer* published the same list of tips for avoiding catching influenza and ways to care for the sick that was found in most newspapers across the state during that month.[83] On October 26, the *Farmer* ran a short article in which they compared the influenza germ sweeping the country to another germ "infecting many neighborhoods whose presence is just as deadly to the efficiency of our people, for it means bad roads, poor schools, neglected churches, discontented young people and older people of small earning power." This germ's name was ignorance, defined by the *Farmer* as "not merely being able to read and write, but failing to read good papers and keep abreast of the times."[84] The solution for this infection was for readers to encourage everyone they knew to subscribe to *The Progressive Farmer*; the *Farmer* quickly turned the epidemic into a sort of subscription advertisement.

This is not to say that *The Progressive Farmer* did not provide helpful tips to its readers. On October 26, November 2, and November 9, 1918 the publication printed continued warnings to readers to avoid crowds, get plenty of rest, and nurse patients

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the epidemic, Poe was a member of the Executive Committee of State Food and Fuel Administration and the War Savings Committee. He also served as a trustee of Wake Forest College and chairman of the executive committee of the board of trustees of North Carolina State College of Agriculture and Engineering at the time of the epidemic. For more information see William S. Powell, "Clarence Hamilton Poe, 1881-1964," *Dictionary of North Carolina Biography* (Chapel Hill: University of North Carolina Press, 2004). http://docsouth.unc.edu/nc/connor/bio.html

[83] *The Progressive Farmer* (Raleigh, NC), October 19, 1918.

[84] Ibid., October 26, 1918.

cautiously.[85] It was not until November 9 that the publication printed information that was necessarily aimed for their direct readership. On that date, the *Farmer* discussed the stabilization of hog prices after a series of sharp increases and decreases throughout October 1918, resulting from many farmers and packers not adhering to agreed-upon prices.[86] The *Farmer* noted that, "Another factor contributing to the break in prices during the month has been the influenza epidemic; it has sharply curtailed consumption of pork products and temporarily decreased the labor staff of the packers about 25 per cent."[87] In the same edition, the *Farmer* seemed to chastise those who complained of a delay in the delivery of their publication during the epidemic, noting that "now that the influenza has added to the postoffice [*sic*] shortage of hands [in addition to that brought about by the war], it is impossible to get the mail delivered to you promptly at all times. Those of us who have escaped the influenza should be happy and thankful with little inconveniences. If your paper came late just realize that everyone is doing his best."[88] The *Farmer* also provided a list of home recipes that could be used to nourish an influenza patient at different stages of convalescence,[89] as well as cautioned against the use of ineffectual and even dangerous old-fashioned "charms" for warding off influenza.[90]

For the remainder of the epidemic, the *Farmer* continued to occasionally publish the list of ways to avoid catching influenza as well as those for nursing flu patients, as

[85] Ibid., October 26, 1918; Ibid., November 2, 1918; Ibid., November 9, 1918.
[86] As part of the war effort, the United States government used centralized price and production controls administered by the War Industries Board, the Food Administration, and the Fuel Administration in order to guide economic activity. For more information see Carlos Lazoda, "The Economics of World War I," *The National Bureau of Economic Research Digest* (January 2005), 1-6.
[87] *The Progressive Farmer* (Raleigh, NC), November 9, 1918.
[88] Ibid.
[89] Ibid., November 16, 1918.
[90] Ibid., November 23, 1918.

well as to encourage their readers to make as few trips into town for supplies as possible in order to remain healthy. The only direct reference to North Carolina during their coverage of the epidemic came in the March 15, 1919 edition, in which the *Farmer* noted that the state Insurance Commissioner and Fire Marshall James R. Young had a "Spring Clean-Up Week" planned for the week of March 24-29, 1919. The purpose of this campaign was "clearing out waste and rubbish that might start or contribute to the destructiveness of fires and in freeing the homes in every quarter of the state from disease germs that may be lurking there to get in their deadly work during the summer months that are approaching."[91] Every householder was asked to "go through the home from attic to basement and all the outhouses as well, and thoroughly clean out every nook and crevice of accumulate waste. Then the application of an effective disinfectant will give the proper execution to whatever germs may be left. This is especially important this spring after the terrible scourge the state has experienced in the deadly sweep of influenza through the state this winter."[92] In total, *The Progressive Farmer* made only forty-four references to influenza from September 19, 1918 to March 31, 1919. This seems a surprising low number considering how much the epidemic must have affected farm labor, farming markets, household supplies, and the general interruption of farming schedules throughout its course. However, as seen, the *Farmer* was not alone in its seemingly light coverage of the epidemic.

What is more surprising is the finding for the *Roanoke Beacon* out of Plymouth, NC. Plymouth is located in Washington County, which experienced abnormally elevated

[91] Ibid., March 15, 1919.
[92] Ibid.

mortality rates from influenza in both October 1918 and March 1919, as did the adjacent counties.[93] The *Beacon* was only published on September 20 and 27 and October 11 during the study period. The September papers made no mention of the flu. However, the October 11 edition ran an article headlined, "Encouraged Over Plague Situation." Below this headline was a printed statement from a health officer from Rowan County (which is located ten counties away in an entirely different region of the state), Dr. Warren, who felt the need to set the record straight about the disease that had "caused several communities in the state to become hysterical." Dr. Warren stated that, "the so-called Spanish influenza is nothing more than the old-fashioned influenza or grippe that we have been having for generations past. We had a pan-epidemic twenty-five years ago and it has appeared as a local epidemic in some localities practically every year since. That it has become more widely epidemic this year is probably due to the ambulatory character of a great portion of civilization today."[94] The first ten days of October 1918 brought 719 flu deaths within North Carolina,[95] but local community health officials were declaring it the same "old-fashioned influenza" that cycles through every year.

In the same edition of the *Beacon*, on page five instead of page one, the paper notes that "Since the Spanish Influenza struck here about two weeks ago, 500 cases have developed, with so far, nine deaths – six white and three colored."[96] The United States Census notes that Plymouth, NC had a population of 1,847 citizens in 1920.[97] If 500

[93] Author's calculations from death certificates accessed from www.ancestry.com. For more information, see Austin, "Falling Around Us," 2018.
[94] *Roanoke Beacon* (Plymouth, NC), October 11, 1918.
[95] Author's calculations from death certificates accessed from www.ancestry.com. For more information, see Austin, "Falling Around Us," 2018.
[96] *Roanoke Beacon* (Plymouth, NC), October 11, 1918.
[97] United States Census, 1920. www.ipums.org

cases of influenza were reported in that town in mid-October 1918, then more than 27% of the population was stricken with the flu at that time and just over 0.5% of the population had already died. Despite the overwhelming pervasive nature of the disease in that area, the town's newspaper was still printing that people should be "encouraged" by the situation and that is was nothing more than the same "old-fashioned flu" seen every year.

The minimal coverage in the *Newton Enterprise* out of Newton, NC is not altogether surprising given that Newton is the county seat of Catawba County, which experienced low levels of influenza mortality in both October 1918 and March 1919,[98] and that the *Enterprise* was only published on November 5 and 15 and December 13 and 17 during the study period. On the front page of the *Enterprise* on November 5, the paper published the State Board of Health's instruction for nursing influenza patients, as transcribed in the previous section of this article. The December 17 edition of the *Enterprise* printed a poem by David Clark of The Southern Textile Bulletin in its "Red Cross Briefs and News" section. The poem is as follows:

> If a pain comes o'er you stealing
> And you have a 'grippy' feeling,
> While your brain commences reeling,
> As a good brain shouldn't do,
> If your bones seem all gone 'holler,'
> While a chill climbs up your collar,
> You may bet your bottom dollar,
> You
> Have
> Got
> The
> Spanish
> Flu!

[98] Author's calculations from death certificates accessed from www.ancestry.com. For more information, see Austin, "Falling Around Us," 2018.

It's the flu, it's the flu;
It's the influenza – flu,
And you'd better be a-watchin',
Or it might get you.
If you have a cough that's hacking,
While with pain your bones are racking,
And in fact there's nothing lackin',
To give misery to you;
When you feel your eyeballs bursting
While with fever you are thirsting
And every moment you seem worsting.
You
Have
Got
The
Spanish
Flu!
It's the flu; it's the flue;
It's the dog-gone Spanish flu;
And you best be stepping lively,
Or it might get you.
When you nearly feel like crying,
When you're moaning and you're sighing,
When you know that you are dying,
Spite of what Doc can do,
You must simply lie and take it,
For the doctor cannot break it –
You
Have
Got
The
Spanish
Flu!
It's the flu; it's the flu;
It's the influenza – flu;
And you'd better be a-dodgin',
For it might get you.[99]

This poem demonstrates that while many people may have desired a return to normality after the war, others recognized that the flu was still an ongoing problem, that the epidemic, while it may have lessened, had not totally released its grip, and that

[99] *The Newton Enterprise* (Newton, NC), December 17, 1918.

caution was still to be taken on a daily basis, even in areas that were not hit especially hard during the epidemic.

A letter published in the *Fayetteville Weekly Observer* on October 16, 1918, precisely in the middle of the height of the epidemic, demonstrates that perhaps the local health officials were not very effective in communicating to the public the seriousness of the epidemic. Despite the fact that 2,095 North Carolinians died of the flu between October 1 and October 16, and fifty deaths were in Cumberland County where Fayetteville is located,[100] the newspaper published the following letter from a citizen named N.P. Ultra:

> To the Editor of the Observer:
>
> Sir: - I note that the call for workers to make influenza masks, pneumonia jackets and nurses' aprons, to be used in fighting the influenza epidemic here at home brought the largest attendance ever recorded at the Red Cross work rooms in Fayetteville. There should, of course, have been a ready response to this humanitarian call; but isn't it a little strange that there should have been so great a difference between this and the response to the call to work for the soldiers FIGHTING FOR US overseas? There is a need here, but a THOUSAND men are dying in France and Belgium to ONE here. Surely, a little fear goeth a long way.[101]

This letter shows the irritation and ire of a citizen who does not understand why such a humanitarian effort was being made to fight the influenza epidemic while there was a war still going on. This brief letter demonstrates that not only were many citizens still greatly ill-informed about not only the severity of the influenza epidemic but also how pervasive it already was throughout North Carolina by mid-October. It also

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[100] Author's calculations from death certificates accessed from www.ancestry.com. For more information, see Austin, "Falling Around Us," 2018.
[101] *Fayetteville Weekly Observer* (Fayetteville, NC), October 16, 1918.

demonstrates that the sentiment prevailing at the state level - that the epidemic was nothing more than the usual "old-fashioned" influenza typically seen each year, that people had no reason to panic, and that everyone should keep the war effort a priority no matter what was happening domestically - was absorbed and reflected at the community level. The letter also seems to suggest that war weariness had possibly begun to set in by mid-October 1918, as N.P. Ultra notes that volunteer turnout for making influenza materials bested that related to making goods for overseas soldiers. If this were the case, then the government would want to encourage citizens to stay focused on the needs of the war even in light of the epidemic at their doorsteps.

Interestingly, Fayetteville had perhaps one of the most culturally diverse experiences of the epidemic throughout the state. At this time, North Carolina was noticeably limited to black and white populations. However, in May 1918 the United States Department of Labor sought to relieve the labor shortages hampering government projects by recruiting Puerto Ricans who were in search of stable income. These roughly 75,000 volunteers were offered affordable meals, free housing, wages of thirty-five cents per hour plus overtime pay, and transportation to the mainland United States.[102] By the end of September 1918, 1,735 Puerto Rican laborers were present in Camp Bragg to help construct the base, with several thousand more scheduled to arrive over the succeeding months. However, almost immediately upon their arrival in Fayetteville, the influenza epidemic struck the camp. Unfortunately, the camp hospital was not yet equipped, and the sick could not be adequately treated. A total of thirty-four Puerto Ricans died during

[102] Jessica A. Bandel, "Puerto Rico and the Beginnings of Fort Bragg," North Carolina Department of Natural and Cultural Resources, July 2017. https://www.ncdcr.gov/blog/2017/07/20/puerto-rico-and-beginnings-fort-bragg

the study period in Cumberland County: thirty-three in October 1918 and one in March 1919.[103] Of the thirty-three who died in October, all died of either influenza or pneumonia except for one who died from asthma and one from blood poisoning. Three individuals had no listed cause of death. The individual who died in March received no medical care, resulting in no cause of death being listed. Therefore, twenty-eight Puerto Ricans died of either influenza or probable influenza-related pneumonia during the October 1918 study period at Camp Bragg, which totaled 13.7% of all Cumberland County flu deaths for October 1918.[104] Additional Puerto Ricans destined for Fayetteville were struck down by the flu in November 1918 onboard their ship, *City of Savannah*, with the two-hundred sickest being detained in Wilmington for treatment and the rest sent back home to the island. Due to the ongoing influenza epidemic, nearly all the Puerto Rican laborers brought to North Carolina to build Camp Bragg were returned to Puerto Rico by the end of December 1918. A handful remained behind to continue construction at Camp Bragg or work for the Waccamaw Lumber Company outside of Wilmington.[105]

It is also interesting to note through the examination of newspapers how different-sized communities reported the epidemic. An example of a larger city's coverage is that of Charlotte, NC. Located in the Piedmont Region of the state, Charlotte is in Mecklenburg County and had a population of approximately 46,338 at the time of the epidemic.[106] In both October 1918 and March 1919, Mecklenburg County experienced

[103] No death certificates recorded in other counties for the study months state that the deceased was born in Puerto Rico.
[104] Author's calculations from death certificates accessed from www.ancestry.com. For more information, see Austin, "Falling Around Us," 2018.
[105] Bandel, "Puerto Rico."
[106] United States Census, 1920.

one of the highest mortality rates from influenza out of the entire state.[107] One newspaper that supplied daily news to the city at this time was *The Charlotte News and Evening Chronicle.* As early as September 23, 1918, this local newspaper warned that the city should prepare for the "globe-trotting disease" to attack.[108] While relegated to page seven out of a twelve-page newspaper, the story printed in *The Charlotte News* on the 23 of September remarked that the city health department and its superintendent Dr. C.C. Hudson were prepared for the disease, but did not think "that quarantine would be necessary because of the generalness of the disease and its ability to spread in spite of regulation, laws and health rules."[109] However, Dr. Hudson also remarked that the strain was "mild and will not hurt the victim unless complications develop" but that public health officials would have more to say on the topic when the "grip" reached the city. On September 30, the paper remarked that the nearby town of Salisbury had two cases of influenza reported the day before when two men traveling to Waynesville, NC stopped over and became ill.[110] The society column on October 1 noted that Miss Ellen Victor, daughter of Mr. and Mrs. H.M. Victor… has a mild case of Spanish influenza.[111] The very next day, the paper related that fifty new cases of influenza had been reported at the city health department between 8-11am that morning and that the Commissioner of Public Safety was meeting with the city health superintendent that afternoon to discuss the possibility of a city quarantine. However, it was acknowledged in the article that such a quarantine would hinder local businesses for weeks and was therefore to be the

[107] Author's calculations from death certificates accessed from www.ancestry.com. For more information, see Austin, "Falling Around Us," 2018.
[108] *The Charlotte News and Evening Chronicle* (Charlotte, NC), September 23, 1918.
[109] Ibid.
[110] Ibid., September 30, 1918.
[111] Ibid., October 1, 1918.

last alternative.[112] In the October 2 evening edition of the *News,* an article about the outcome of the meeting reported that no quarantine was necessary, an outcome which was very "gratifying to everybody interested in the operation of amusement places in Charlotte of which there are a dozen or more." However, the society column that day still felt compelled to mention that a certain Mrs. W.H. Wearn was confined to her home on North Caldwell street suffering with influenza.[113]

The very next day, October 3, the paper reported that up to 175 cases of the flu had been reported by the city health department and that medical staff were already in short supply. However, schools were to remain open and no quarantine was being considered.[114] However, the last page of that day's paper reported that Camp Greene, the military training camp located directly outside of the city of Charlotte, was under quarantine effective starting that day due to high levels of influenza being reported in the city, which camp officials desired to keep away from the camp. "The quarantine regulations forbid any soldier to leave the camp or to enter the city except upon important business, 'and these cases will be few. Visits of civilians to the camp will also be discouraged,'" declared the camp.[115] The last page of that day's paper also carried the notification of the city's first influenza death, Mrs. Rosa Stegall.[116]

The Charlotte News declared on page seven of the October 5 newspaper that a quarantine had been "clapped on city at 6 o'clock last night by commissioners" and was

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[112] Ibid., October 2, 1918.
[113] Ibid.
[114] Ibid., October 3, 1918.
[115] Ibid.
[116] Ibid. Death certificates recorded in Mecklenburg County note that Rosa Stegall's death on October 2, 1918 was not the first in the county. The influenza death of a soldier was recorded at Camp Greene on October 1, 1918.

to stay in place until at least October 15. Aside from the formal proclamation, which closed businesses, schools, churches, amusement centers, and all indoor gatherings, the mayor of Charlotte, F.R. McNinch released a statement which read:

> We greatly regret the necessity for putting on a strict quarantine against public gathering and crowds indoors in the city, as we fully appreciate the loss in a commercial way and the great inconvenience to the people which such a quarantine means. Even with the quarantine on, we are not led by the physicians to hope for the prompt eradication of this disease as it is so highly contagious; but the history of such epidemics does lead us to hope that through strict enforcement of the quarantine… physicians and nurses in the city may be able to properly minister to those who may be stricken. One of the most serious effects of the quarantine and one which gives us great concern is the serious interference with the plans of the liberty loan committee for public meetings, and I sincerely hope that our people will rally to the support of the committee and compensate for the loss of these meetings by an added measure of enthusiasm, patriotism, and personal work on behalf of bond sale. Our liberty bond quota must be taken at all hazards, as we must not think only of protecting ourselves against disease, but it is our imperative duty to protect our army from both disease and death by providing the money necessary for the proper conduct of war. Let everybody buy at once just as many bonds as he possibly can and thereby help quarantine against the Hun.[117]

This statement by Mayor McNinch shows that even in the face of influenza sweeping through his city, local officials were still pushing the war agenda well ahead of the public health agenda "at all hazards." The city officials may have recognized that a quarantine was necessary, but they wanted the residents to know that the war effort was still to remain the most important event in the forefront of everyone's mind.[118]

Over the course of the next week, the paper continued to report on the actions of city officials and also on personal cases of influenza that were deemed worthy of notice in the society column. In several cases, the paper made note of weddings that had been

[117] Ibid., October 5, 1918.
[118] Numerous cities throughout North Carolina imposed quarantines during the epidemic. These will be discussed when attention is turned to local and county level measures.

changed or canceled due to the flu, usually at the request of the mayor and city health superintendent. “Sane thinking and normal conduct” were heavily encouraged as “fear drives away no evil.”[119] Daily coverage of the epidemic persisted over the next few weeks although it is interesting to notice that only fifty-nine out of the 1,050 (5.6%) mentions of influenza contained in *The Charlotte News* between September 19 and the end of March were on the front page of the paper. The front page was mainly reserved for war-related news both prior to and after the armistice.

Throughout October and early November, the paper reported on the extension of the city quarantine, acknowledging that while the extension was “unfortunate for business interests and other interests to have to pass through further delays… business is a secondary consideration to the health of this community.”[120] However, excitement when the quarantine was lifted on November 11, Armistice Day, was almost palpable, with the newspaper boasting that the removal of the ban would “ensure big week to pleasure lovers.”[121] The lifting of the ban combined with the assured armistice to come at any time surely sent a wave of celebration across the city, with many people failing to or choosing to remember that the epidemic was still very much a reality. Indeed, such celebrations seemed to have been premature, as the Charlotte city schools were once again placed on quarantine starting on December 3 and lasting through the end of the year. Businesses and places of amusement were to remain open during this quarantine because city officials felt that it was “easier to overcome the liabilities of a quarantine in this sphere [school] than in any other.”[122] It seems clear that local businesses were greatly opposed to

[119] *The Charlotte News and Evening Chronicle* (Charlotte, NC), October 6, 1918.
[120] Ibid., October 18, 1918.
[121] Ibid., November 10, 1918.
[122] Ibid., December 4, 1918.

another large-scale quarantine so close to the holiday season and, despite a significant resurgence of influenza cases in the city, the city officials sided with business owners.

By January, mentions of the flu in *The Charlotte News* had decreased significantly to mainly include obituaries of victims, advertisements for patent medicines aimed at curing some part of the flu experience, and quotes from the public regarding their frustration with the ongoing epidemic. On January 18, 1919, the *News* published a quote from Mr. A.B. Cheatham who was angry at the epidemic for slowing his attempt to quit smoking:

> This influenza business won't let a fellow reform when he wants to. Just about the time influenza broke out… I made up my mind to quit smoking, and about the same time I heard somebody say tobacco was a good thing to keep the 'flu' off. I thought I would stick to it... and get the good out of it. Now, that was back in October and we still have influenza. Consequently, I'm still smoking. I am ready to reform but 'flu' keeps me from it," he stated.[123]

The newspaper reported on flareups of the disease within the city but after the November 11, 1918 armistice, the mention of any epidemic-related news on the front page of the paper became more unlikely and usually only occurred when a prominent or well-known citizen died of the disease.[124] It is evident through this examination of influenza-related articles in a large North Carolina city daily newspaper, that the decreasing coverage reflected the waning interest mentioned by Shylock in the allegorical editorial published in the January 1919 *State Health Bulletin.* After the war ended, there was a strong desire to return to a normal life and further instances of the epidemic hindering that return were met with some resistance and frustration. As the weeks passed and the epidemic became

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[123] Ibid., January 18, 1918.

[124] Examples include the deaths of Mr. W.S. Lee (February 7, 1910) and Dr. Clarence F. Swift (March 26, 1919), published on those respective dates on *The Charlotte News and Evening Chronicle* front page.

more commonplace, it slid from the tentative spot that it held on the front page during the height of the epidemic and was firmly relegated towards the back pages of the newspaper. But how does this coverage of a larger city compare with that of a smaller town?

The Daily Free Press, published daily in Kinston, NC, which had a population of 9,771 in 1920, is an interesting comparison newspaper.[125] While *The Daily Free Press* had 269 total mentions of influenza in print between September 19, 1918 and the end of March 1919 compared to the 1,050 in *The Charlotte News,* 179 of those references, or 66.5%, were on the front page of the paper compared to only 5.6% in the *News.* Situated in the Coastal Plain region of the state, Kinston is located in Lenoir County, which experienced one of the highest influenza mortality rates in the state during October 1918 and neither an abnormally high or low influenza mortality rate in March 1919. The first mention of influenza in the *Free Press* was on September 25, 1918 when the paper warned its readers that "The disease known as influenza, or 'grippe,' in a virulent form has appeared in many sections of the country and threatens to become widely epidemic."[126] The article then cautioned people to be alert and to go home immediately and stay there if they felt that they were showing signs of being sick with influenza. The next day's paper brought a similar word of caution from the county health official, Dr. J.S. Mitchener, but provided no further news.[127]

However, on September 30, the newspaper printed a short article that "If any Spanish influenza puts in its appearance in Kinston toward the latter part of the week, old

[125] United States Census, 1920.
[126] *The Daily Free Press* (Kinston, NC), September 25, 1918.
[127] Ibid., September 26, 1918.

John Robinson, although dead long ago, will be held responsible: for the show that bears his name, as all other such gatherings, will unquestionably be a splendid medium for conveying the germ of the malady that is attacking in every state of the Union now."[128] This article made it clear that at that point, the pervasive feeling in Kinston, at least the viewpoint portrayed by the town newspaper, was supportive of the voluntary quarantine suggested by health officials and angry that The John Robinson Circus chose to continue its tour, complete with a stop in Kinston, in spite of the epidemic sweeping the nation and local area. Unlike in Charlotte, no one appeared apologetic at the loss of business or revenue due to the isolation regarded as a necessary means to keep the flu from spreading.

In the October 1, 1918 *Free Press*, the head of the Health Department, Dr. Mitchener, released a statement that: "'Flu' has struck our town. Several cases have been reported. I advise people to let the other fellow go to the circus for them, and the picture shows, as well."[129] By October 3, the Health Department acknowledged that nearly forty unreported cases of Spanish influenza were in town, but that they did not deem this to be an unusual number of cases for their particular part of the country. They also said that there was no need to close schools and there has been "no tendency on the part of the public to become panicky."[130] The Lenoir County Health Board upheld this view on October 5, with the paper reporting that the County Health Board "took a tumble out of expectations of some local authorities and a large part of the public by agreeing that the local influenza situation is not serious enough to warrant closing public institutions. Such

[128] Ibid., September 30, 1918.
[129] Ibid., October 1, 1918.
[130] Ibid., October 3, 1918.

action, based on the advice of National and State health authorities, is being taken at numerous points in the country."[131] This inaction on the part of the local board of health prompted the newspaper to print the following rebuttal on page two in the name of its readers:

> While *The Free Press* has due regard for the Lenoir County Health Board's opinion and its finding that the local situation as regards Spanish influenza infection, was not such as to warrant alarm is reassuring, it nevertheless feels that the board erred in not respecting the advice of the Surgeon General of the United States and the Secretary of the State Board of Heath.
>
> The influenza situation is not simply epidemic but pandemic. It cannot be regarded as a local proposition but must be viewed from the state and national aspect. It has made its appearance everywhere and in almost every locality has become epidemic.
>
> Dr. Rankin, secretary of the State Board of Health, sent out to all county health officers Saturday the following warning:
>
> "After conference and with hearty approval of Governor Bickett, the chairman of the State Council of Defense, Dr. D.H. Hill, and Major Kenyon of the United States Army, I now strongly advise that on the appearance of la grippe or Spanish influenza in any city, town, village, or thickly settled rural section, schools, moving picture shows, fairs, circuses and other public gatherings, including church services and Sunday schools, be prohibited under chapter 62, public laws of 1911, section 910, 94, and 15."
>
> It will be observed that the recommendation is "on the appearance of" and not when an epidemic exists. While the local situation, which *The Free Press* is inclined to regard as being serious, may not warrant the closing of public gathering places the pandemic situation does. In Wilmington there have occurred more than 6,000 cases and many deaths. In fact it is reported that the death rate has been so large that undertakers had to be called in from other places to bury the dead.
>
> *The Free Press* believes that 'An ounce of prevention is worth a pound of cure,' and that the Lenoir County Health Board would do well to reverse itself and safeguard the health of this community. It is better that too much precaution be exercised than not enough. Business will suffer but it is better than business should become disorganized than that life should be imperilled [*sic*].

[131] Ibid., October 5, 1918.

> Whether the County Health Board regards the situation sufficient to take any action, the city authorities may well take steps to have the sanitation of the city brought up to the standard. The recommendation of Health Officer Mitchener as regards the cleaning up of the restaurants, soda fountains and public eating places should all be taken.
>
> It is very timely. Some of these places are notoriously filthy and dangerous in normal times to say nothing of the present situation, and the streets of Kinston are a disgrace to any respectable community.
>
> Let's have a cleaning up![132]

This scathing article clearly shows that in the town of Kinston, a battle was brewing between the local daily paper and the Lenoir County Board of Health over the epidemic. The newspaper was clearly dissatisfied with the decision of the board of health and suggested that its decisions were not based on the good of the town or even the county as a whole but were in some way based on the immediate monetary needs of the town, including the continuance of business practices and the interests of those businesses. Editor H. Galt Braxton continued to publish barbs against the county board of health, remarking on October 8 that "The fatalist may believe that all precautions against influenza are superfluous and unnecessary, but then we are not fatalists."[133]

The town's leading editor clearly used his position of prominence in the community to question the decision-making of the county board of health and to encourage his readers to do the same. Such reporting was not seen in larger cities such as Charlotte. Braxton then goes on to note that the board of health planned to meet again that evening to discuss yet again the closing of such places as churches, schools, and tobacco markets. The editor continues to push the question of whether its failure to do so

[132] Ibid., October 7, 1918.
[133] Ibid., October 8, 1918.

is a "violation of sprit of policy of those higher up."[134] It seems that other governing bodies decided to take matters into their own hands despite the reticence of the board of health; on October 8, 1918, the school board of Kinston announced that in order to combat the spread of the epidemic the schools would be closed for one week, possibly longer, with teachers prohibited from leaving the city.[135]

By October 9, Braxton reported that "officials cooperate" to put an end to the epidemic, with the board of health ordering the closure until October 21 of all cotton, knitting, and silk mills, the Kinston tobacco market,[136] with most stores being ordered to open only from 9am-4pm.[137] The situation worsened, however, and the board of health extended the quarantine even before the deadline. Oddly enough, *The Free Press* published on October 11 that "there are to be nine more days of Kinston's enforced 'provincialism,' with nearly all industries suspended and the population deprived of many luxuries, including soda water and the movies." Just days before, the paper had lambasted the local board of health for not taking action, but now seemed to be complaining that Kinston was now a "dead town" by 4pm in the afternoon.[138] Throughout the next couple of weeks, *The Free Press* bounced back and forth between reporting that the epidemic was losing ground and the influenza spreading like wildfire throughout the county. The

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[134] Ibid.
[135] Ibid.
[136] Tobacco markets and auctions were immensely important to the tobacco industry in North Carolina during the late 19th and early 20th century. When the auction was over, local citizens knew by the prices paid to the farmers whether or not they would enjoy a good economic year. The auctions were also the primary methods of selling bright leaf tobacco in North Carolina, as well as an opportunity to socialize with others one rarely encountered, what would now be regarded as "social capital." W.W. Yeargin, "Tobacco Auctions." 2006. https://www.ncpedia.org/tobacco-auctions
[137] *The Daily Free Press* (Kinston, NC), October 9, 1918.
[138] Ibid., October 11, 1918.

situation seemed to change daily, with no doctors being available to provide correct statistics to the county board of health.

Unwilling to lose a chance to remind the board of health that they had dropped the ball early in the epidemic, Braxton on October 19 published that:

> The action of the health board in extending the closing order is, *The Free Press* believes, wise. It is certainly the safe course to pursue. The hesitancy of the local board to take action on Sunday, October 5, when the warning from state and national authorities went forth, was costly and proved full well that every precaution must be taken to safeguard the health of the community.
>
> Those industries which are shut down completely should, *The Free Press* believes, be benefitted by some modification as the rules pertain to them, as quickly as the authorities can feel safe in doing so. The cotton mills, which are well ventilated might be permitted to operate on a partial scale. Their employees are in need of the earnings. However, any modification is apt to precipitate an overwhelming appeal for exceptions. Every fellow will very naturally feel that his case is worthy and it is better that the bars stay up for them to be let down too much.[139]

It is evident from this article that some concern was starting to circulate in Kinston regarding lost wages and the welfare of those unable to work during the epidemic. However, as Braxton reminded his readers, decreasing regulations for some would potentially open the floodgates for everyone else with the consequence that return too soon to normality could result in a resurgence of influenza in the population. Based on Shylock's story of why the epidemic seemed to circulate so long into the spring, *The Free Press* was seemingly entirely correct in printing its concern about the softening of restrictions.

Throughout the remainder of October, *The Free Press* reported the deaths of local citizens, and reported several times that the epidemic consistently seemed worse in the

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[139] Ibid., October 19, 1918.

country districts than it did in the city.[140] By October 26, 1918, the Lenoir County Board of Health declared that the epidemic in Kinston was "becoming thing of past" and would allow business to resume ordinary practices on Monday the 28, with schools opening on a staggered schedule based on the number of influenza cases reported in their districts.[141] Yet again, *The Free Press* used its position as the voice of the city and surrounding areas to argue against the decision of the board of health. The paper published that:

> *The Free Press* would like to urge with might and main today "Business as usual" for this season of the year but it regards the safeguarding of human life of far more importance than the restoration of business. The lifting of the closing order should be accepted by the people with conservatism and prudence. The danger of influenza is by no means spent.
>
> The possibility of a recurrence of the epidemic is entirely within reason. If the general mass of the people resume their gatherings and promiscuous contact with each other now, there is grave danger of restoring the epidemic and with the coming of the colder weather the problem of fighting the malady and its complications, which become aggravated with the cold season, will be much more complex.
>
> *The Free Press* urges that care be exercised until every vestige of the scourge has been driven from the State and the entire section.[142]

It becomes apparent as one continues to read *The Daily Free Press* throughout the course of the epidemic that, from a public health viewpoint, the people of Kinston were indeed fortunate to have a reasonable voice such as *The Free Press* to remind them that a swift return to "business as usual" could very well be harmful to their overall health. Braxton and his newspaper also seemed to acknowledge that the board of health was making decisions based on, and potentially even influenced by businesses in the area who were tired of losing revenue and worried about their losses in the upcoming Christmas

[140] Ibid., October 22, 1918; Ibid., October 24, 1918.
[141] Ibid., October 26, 1918.
[142] Ibid., October 29, 1918.

holiday "season." Such a personal voice of reason was not easily found, if found at all, in the newspapers published in larger cities at the time, leading one to feel that the experience and truthfulness of the epidemic differed greatly between large cities and smaller towns.

Other than reporting on local deaths, Kinston seemed to remain fairly quiet during November. However, a sharp resurgence of influenza cases in mid-December, attributed to the rise of the number of Christmas "box parties" and shopping, had *The Free Press* once again urging its readers to pay attention to what was happening around them and urge the county board of health to make decisions while the "horse" was "still in the stable."[143] The paper noted that there was a "growing daily increase" in the number of influenza cases in both Kinston and Lenoir County, that the situation indicated another epidemic, and that "had not the terrible experience of October inured the public mind, the present situation would be so regarded."[144] This point made by *The Free Press* is a crucial one in determining why people seemingly failed to react to dangerous resurgences of the epidemic in November and the months after as they had done in September and October. Braxton rightfully noted that the general public were "inured" by the horrific experiences of October. He suggested that no matter how bad the influenza was to become again in Lenoir County, the people were used to it and were likely to fail to acknowledge it, much less change their holiday plans for it. This idea of people being "inured" to the epidemic is quite different from them failing to cope with it and therefore absorbing it into the narrative of World War I, as suggested by Crosby, Hume, and Outka. This important point laid out by the Kinston daily newspaper suggests that people

[143] Ibid., December 17, 1918.
[144] Ibid.

had very quickly learned to accept influenza and death resulting from it as a way of life. The idea of inurement suggests that it did not surprise residents anymore, that they were hesitant to make exceptions for it, and that they were likely to not even notice that it was happening around them yet again. Perhaps it was not that they were so determined to return to normal after the war: perhaps they simply began to see the epidemic as a way of life. This suggestion pairs well with Shylock's statement in the *Health Bulletin's* allegorical editorial that the flu had become "commonplace" by as early as November 1918.[145] This idea will be explored more when the individual level experiences of North Carolina citizens is discussed later in this article.

After December 1919, the reporting of the epidemic in *The Daily Free Press* became somewhat standard, with little more than death notices and the publication of rescheduled dates of city events postponed by the flu. Occasional bursts of flu would flare up in the city, but the paper began to only acknowledge them in blurbs. Perhaps, like everyone else, *The Free Press* itself began to be "inured" to the epidemic. Regardless, the coverage of the epidemic in Kinston from September until December showed a marked difference from that of Charlotte's newspaper. While *The Charlotte News* did report on the epidemic, there was a definite deferral to the war effort, a constant reminder of people to remain calm, and evidence of a push for its readers to gravitate towards a "return to normal" swiftly after the armistice. In smaller Kinston, however, *The Free Press* brought a much more personal characteristic to coverage of the epidemic, urging its readers to take action where needed, and fight for their rights as citizens who want to survive the epidemic. *The Free Press* also acted as a voice of conscience to those who were apt to

[145] "Allegorically Speaking," 1-4.

want to "return to normal" too quickly after the war and after the October crush of flu deaths had passed. It is easy to argue that, since the newspapers each approached the epidemic in different ways, then the community level response of their readers to the epidemic were probably drastically different as well, providing evidence that the flu experience varied from community to community within North Carolina.

The Responses of County Boards of Health

As previously explained, not every county in North Carolina maintained a board of health at the time of the epidemic. In fact, it was not until the epidemic struck and county officials met to organize relief efforts that some counties realized both that they lacked a board of health and that they desperately needed one. Such was the case in Orange County, North Carolina. The spread of influenza within Orange County caused the County Commissioners to call a meeting to organized efforts for influenza relief work. As Annie Sutton Cameron notes in *A Record of the War Activities in Orange County, North Carolina: 1917-1919*, "it was realized at this meeting that there was no County Board of Health, and so one was created, with Dr. Spoon of Hillsboro as County Health Officer, who with the following constitute the Board of Health: Dr. B.B. Lloyd; Ed N. Cates, Chairman of the Board of Commissioners; Jeff Turner, Mayor of Hillsboro; R.H. Claytor, County Superintendent of Schools."[146] Subsequently, the records note that "On October 7, the Board of Health ordered the closing of all churches, schools, theatres,

[146] Annie Sutton Cameron, "A Record of the War Activities in Orange County, North Carolina: 1917-1919," 1919. p. 75. #566, Manuscripts Department, Southern Historical Collection, University of North Carolina at Chapel Hill. Orange County also contains the then small village of Chapel Hill, seat of The University of North Carolina since the 1790s.

etc., and forbade all meetings of every kind, in order to prevent, if possible, a spread of the disease which had already broken out in the community."[147]

Many of the county boards of health that were active during the influenza epidemic seemed to be quick to take preventative action at the beginning of the epidemic, although not every board of health worked in conjunction with the towns they served. Perhaps the quickest town to take action was Lumberton, NC. On September 30, 1918, *The Robesonian* reported that "Prompt Action" was to be taken to "Prevent Spread of Influenza." The article stated that "town authorities close schools, churches and places of amusement, prohibit serving drinks at fountains and quarantine against places where disease is prevalent – cotton mills shut down."[148] Not only did the town close schools, the moving picture show, and canceled the revival of Evangelist B.F. McLendon, they also closed all four cotton mills located within Lumberton for an "indefinite" period of time. The most interesting fact about this article is that the town of Lumberton levied quarantine measures three full days before the Governor made his statewide proclamation against influenza. One reason for this is Lumberton is situated in Robeson County, which is located in the Coastal Plain region of North Carolina and therefore began seeing influenza cases earlier than more westward counties in the state. By September 30, Lumberton reported ninety influenza cases in the town and 117 in the county, up from only six cases reported in town the prior week. Interestingly, placing a quarantine on schools, churches, and mills was not enough for the city of Lumberton; they also put a quarantine in place *against* places where the disease was thought to be prevalent, specifically "Charlotte, Wilmington, Fayetteville, and all points in Bladen and

[147] Cameron, "War Activities," 75.
[148] *The Robesonian* (Lumberton, NC), September 30, 1918.

Cumberland counties." This quarantine against visitors from these areas was taken at the advice of Dr. W.A. McPhaul, a Robeson County health officer. The county health office was also reported to have "wired the manager of the Sparks shows, billed to exhibit here Saturday of this week, that the show would not be allowed on that date." Therefore, while the town of Lumberton levied these restrictions instead of the Robeson County Board of Health, the county health officers were involved in the early quarantine decisions.[149]

The Robeson County Board of Health followed suit on October 7, 1918, issuing an ordinance "closing all the private and public schools of the county, all kinds of shows, forbidding the holding of Sunday school and church services, lodge meetings or any other public meeting in the county until further notice from the board."[150] The county's edict was well-timed, for by October 14 the town of Lumberton had lifted its quarantine against Charlotte, Fayetteville, Wilmington, Bladen and Columbus counties at the advice of the county health officer because the quarantine against such places "had proved of doubtful value and… has been impossible to enforce."[151] However, the town regulations remaining for the closing of the schools, prohibition of public gatherings, and congregating in the streets, along with the newly imposed restrictions put into effect by the county board of health, left Lumberton and Robeson County "with the hope that the spread of the disease might be held in check as much as possible."[152] By October 24, the mills were allowed to reopen after being closed down for three weeks.[153] Other restrictions took longer to be lifted; the school closure and the ban on public meetings

[149] Ibid.
[150] Ibid., October 7, 1918.
[151] Ibid., October 14, 1918.
[152] Ibid., October 7, 1918.
[153] Ibid., October 24, 1918.

stayed in effect until the middle of November 1918.[154] While outcomes for Lumberton specifically are not available, analyses shows that Robeson County's quarantine measures did not prove as preventative as the county leaders hoped. In October 1918, Robeson County reported higher than average mortality levels when compared to other North Carolina counties.[155]

In a manner similar to, but not as stringent as that of the town of Lumberton, the Durham County Board of Health issued a statement as early as September 27 cautioning that the "Spanish Influenza" was "probably the same as the ordinary influenza or the la-grippe, except that it has become more widespread, the symptoms much more severe, and attended by more serious complications and a higher rate of mortality."[156] It instructed individuals to avoid crowded and poorly ventilated places, keep sleeping apartments roomy and well ventilated, keep houses not overheated, get plenty of fresh air, but avoid getting wet. By October 3, the Durham Board of Health decided to take action to prevent the spread of the flu and placed tight restrictions on moving picture theaters, church gatherings, public speaking, and unnecessary indoor and outdoor assemblages. Churches in the midst of holding revival services had the remainder of their services called off.[157] However, one "boisterous" negro preacher in Durham planned to defy the orders of the county board of health and "abusively" declared to Dr. Arch Cheatham and Bacteriologist J.H. Epperson (both of the county health board) that he still intended to hold services on Sunday October 6 because "'my God' is the law and not man." Dr.

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[154] Ibid., November 11, 1918.
[155] Author's calculation of age-sex-race adjusted county mortality rates from www.ancestry.com and the 1920 United States Census. For more information, see Austin, "Falling Around Us," 2018.
[156] *The Durham Morning Herald* (Durham, NC), September 27, 1918.
[157] Ibid., October 4, 1918.

Cheatham informed the preacher that if he held services the next day, he would be indicted and prosecuted to the full extent of the law.[158] No follow-up on the preacher was printed. Despite the widespread closures of churches and other public places, it was not deemed necessary to close the Durham County schools until October 7, when they were closed for a period of at least two weeks.[159] By November 1, 1918 the Durham County Board of Health still refused to open schools but did concede to pressure from local businessmen that the Tobacco Board of Trade could open their warehouses Monday-Wednesday of that week, then close again until further permission was granted.[160] In contrast to Robeson County, Durham County's quarantine measures seemed more effective: in October 1918, Durham County reported moderate mortality rates when compared to other North Carolina counties.[161]

Similarly, the Wayne County Board of Health closed the county's public schools prior to October 6, 1918, canceled church services, and closed all places of amusement. Also, the Wayne County Fair Association postponed the county fair scheduled for the second week of October and refunded the sale of all fair tickets.[162] By October 6, the city of Goldsboro was reporting 1,500 cases of influenza in the city alone and the Wayne County Board of Health was taking "heroic measures" to try to prevent the spread of the

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[158] *News and Observer* (Raleigh, NC), October 6, 1918.
[159] *The Durham Morning Herald* (Durham, NC), October 8, 1918.
[160] Ibid., November 1, 1918. The Tobacco Board of Trade was a kind of business guild to which both tobacco manufacturers and warehousemen belonged. The Board was established in 1872 in the interest of protecting and improving the tobacco business by cooperation among its many members. For more information see, Jean Bradley-Anderson, *Durham County: A History of Durham County, North Carolina*. Durham: Duke University Press, 2011, 117-119. Durham was also the headquarters of The American Tobacco Company and the source of the Duke family's first great fortune, which was based on the mechanization of cigarette manufacturing. For more information see, Robert F. Durden, *The Dukes of Durham, 1865-1929.* Durham: Duke University Press, 1975.
[161] Author's calculation of age-sex-race adjusted county mortality rates from www.ancestry.com and the 1920 United States Census. For more information, see Austin, "Falling Around Us," 2018.
[162] *The Durham Morning Herald* (Durham, NC), October 6, 1918.

flu.[163] Another county in the Coastal Plain region, Vance County, also closed all of its "moving pictures, schools, churches, and public gatherings" on October 6 by order of the county board of health "to avoid further spread of the disease."[164]

Also reported on October 6, 1918 was the closure of all places of assembly in Cumberland County, where the army was building Camp Bragg. The Cumberland County Board of Health issued an order on October 6 which "closed all schools, theaters, churches, and motion picture and tent shows in Fayetteville and Cumberland County and prohibits all public gatherings until further notice."[165] It is interesting to note that in accordance with the board of health's mandate, the county liberty loan committee "tentatively" cancelled dates for all liberty loan rallies in the county, although "the house-to-house canvass will continue."[166] Thus, wartime issues were still given prominence, even in the face of countywide measures of quarantine.

On October 10, 1918, *The Messenger and Intelligencer* of Wadesboro, NC reported that the Anson County Board of Health had "deemed it wise that no public gatherings of any kind" be permitted in the county. It stated that all "schools and churches of the county are closed. The moving picture show is closed, John Robinson's circus will not come, and the great singing contest between the colored people of Anson and Union counties has been postponed."[167] This quarantine was put in place even though the board of health stated that the "influenza itself is not serious" with scattered cases throughout the county, and that "the alarmist reports spread in some parts of the county

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[163] Ibid.
[164] Ibid.
[165] *Greensboro Daily News* (Greensboro, NC), October 6, 1918; *The French Broad Hustler* (Hendersonville, NC), October 17, 1918.
[166] *Greensboro Daily News* (Greensboro, NC), October 6, 1918.
[167] *The Messenger and Intelligencer* (Wadesboro, NC), October 10, 1918.

concerning the prevalence of the disease in Wadesboro are without foundation."[168] In order to enforce the quarantine order of the local board of health, Mayor U.B. Blalock announced that the regular Saturday trading gatherings had been canceled, although people who wished to trade in Wadesboro were allowed to do so on any other day but Saturday, as long as they did not congregate in the streets. Mayor Blalock further announced that "special policemen" had been detailed to patrol Wadesboro to make sure that trade crowds did not congregate in the streets and that arrests would be made "if necessary."[169] The mayor finally noted that "Wadesboro has always extended the glad hand of welcome to every one, both black and white, and will again do so as soon as all quarantine regulations are lifted."[170]

Counties in the western part of the state, specifically those in the mountain region, generally experienced lower levels of flu mortality but their boards of health often decided to act in accordance with the desires of the State Board of Health. On October 10, 1918, *The Carolina Mountaineer and Waynesville Courier* reported that the board of aldermen, the mayor, and a representative of the county board of health decided to preemptively close the Waynesville Theatre, the school, and the churches for "awhile, although only a few cases of influenza are present here." The article went on to state that "Asheville and Canton have done the same as Waynesville and it looks as if all these towns are using the right precautions to prevent the spread of a terrible epidemic."[171] The *Mountaineer and Courier* also reported that the army hospital at Sulphur Springs (located in Asheville) and its grounds had been quarantined by a Colonel Davis the week

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[168] Ibid.
[169] Ibid.
[170] Ibid.
[171] *The Carolina Mountaineer and Waynesville Courier* (Waynesville, NC), October 10, 1918.

previously even though the hospital had reported no cases at that point. The quarantine was put into effect because "the condition of many of the patients is such that they could not resist the disease" and every effort was made to keep out the flu.[172] By November 7, the local board of health allowed for schools, churches, and Sunday schools to reopen in Waynesville and the surrounding Haywood County area.[173] Even in mountain areas where the flu did not hit especially hard, like Waynesville in Haywood County, the county boards of health were anxious to not only put into effect the wishes of the State Board of Health but also take preventative measures to keep the influenza out of their communities as much as possible.

One mountain county that faced a different battle during the epidemic was that of Buncombe County. By the turn of the twentieth century, tuberculosis had become the leading cause of death in the United States, especially in the tenements of large cities. Due to its unknown origin and initial mislabeling as a hereditary, constitutional disease instead of a contagious one, a wide variety of largely ineffective treatments emerged.[174] The most popular treatment called for relocation of the patient to an environment that boasted clean air, sunshine, low humidity, and cool night temperatures. Western North Carolina's temperate climate attracted tuberculosis sufferers, especially after new railroad construction in the 1880s. Many sanatoriums opened in the Asheville area of Buncombe County, bringing thousands of tuberculosis patients to the state.[175] This overabundance of inhabitants with already fragile health and compromised immune systems meant that

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[172] Ibid.
[173] Ibid., November 7, 1918.
[174] "Tuberculosis in Europe and America, 1800-1922: Harvard University Library Open Collections Program," http://ocp.hul.harvard.edu/contagion/tuberculosis.html.
[175] "Sanitariums: North Carolina Digital History," http://www.learnnc.org/lp/editions/nchist-newsouth/5504.

Buncombe County was positioned to experience elevated mortality rates during the epidemic. On October 5, 1918, the Buncombe County Board of Health ordered "churches, schools, and 'movies'" closed immediately, meaning that the Asheville area became one of the first in the western part of the state to enforce closures.[176] By October 23, 2,827 cases of influenza had been reported in Asheville alone; three days earlier the newspaper had reported 3,501 in both the city and surrounding areas.[177] The Grove Park Inn in Asheville lost thirty of its employees at one time to influenza.[178] The county board of health ordered temporary hospitals be put into use and the city high school was duly transformed in the last week of October.[179] Their efforts produced mixed results; Buncombe County experienced neither abnormally high or low influenza mortality rates in October 1918 (832.61 per 100,000) compared to other North Carolina counties, but did experience one of the highest flu mortality rates in the state in March 1919 (130.57 per 100,000).[180] Despite the efforts of the Buncombe County Board of Health and the fact that 133 individuals died of the flu in Buncombe County in October 1918, 101 of whom lived in Asheville itself, by early November, the local newspaper had seemingly ceased covering the epidemic in the area, focusing instead on the end of the war.[181] The residents of the town were also growing weary of cooperation and lack of normalcy from the epidemic. Indeed, when influenza surged again in Buncombe County in mid-January 1919, nearby papers outside of Asheville were quick to note that "unless some other

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[176] *Asheville Citizen* (Asheville, NC), October 5, 1918.
[177] Ibid., October 20, 1918; Ibid., October 23, 1918.
[178] Sarah McCulloh Lemmon. *North Carolina's Role in the First World War* (Raleigh: North Carolina Department of Cultural Resources, Division of Archives and History, 1975), 36.
[179] *Asheville Citizen* (Asheville, NC), October 23, 1918.
[180] Author's calculation of age-sex-race adjusted county mortality rates accessed from www.ancestry.com and the 1920 United States Census. For more information, see Austin, "Falling Around Us," 2018.
[181] Ibid.

action [than a partial ban on gatherings] is taken up in the next few days by the authorities, which will either allow all public places to remain open or to close all, so many people will be dissatisfied that it is believed it will be next to impossible to secure the co-operation of the people generally combatting the disease."[182] This observation makes it clear that the people of Asheville were tired of dealing with the epidemic and were likely to cease cooperation with local authorities concerning quarantine measures by January 1919.

Some counties were slow to have their boards of health step in with quarantine regulations. While counties such as Robeson, Durham, Wayne, Cumberland, and Anson levied quarantines as a way to prevent the spread of influenza, other counties chose to act only once the flu had become widespread in their communities. The city council of Gastonia ordered the city's schools, churches, and moving picture shows to be closed on October 8, for a period of fifteen days, because influenza was "raging" in the city, with the city's physicians estimating between "500 to 1,500 cases in the city." They also put restriction in place regarding city retail business practices. The city's Board of Aldermen further ordained that anyone who violated the city's flu ordinances were subject to a fine of fifty dollars for each offense, with the city's police officers charged with enforcing "each and every provision and requirement of this ordinance.[183] However, while the city of Gastonia was taking steps to prevent the spread of influenza by no later than October 8, the Gaston County Board of Health did not announce widespread county closures until October 18. On that date, the Gaston County Board of Health announced that all "manufacturing plants, schools, and churches for a period of one week" would be closed

[182] *Greensboro Daily News* (Greensboro, NC), January 17, 1919.
[183] *The Gastonia Gazette* (Gastonia, NC), October 9, 1918.

due to quarantine. They also noted that they were enforcing countywide the same business restrictions that Gastonia had already put in effect; namely that merchants were allowed to serve customers through the doors but no customers were allowed to go inside of the stores.[184] The article in the *Gastonia Gazette* then reported that "practically every section of the county is suffering… from the epidemic" and that "to the board of health it appeared that the most effective way to combat the disease was to close up everything in the county."[185]

A comparison of mortality rates for October 1918 for counties that implemented quarantine measures quickly and those that were slower shows mixed results. Regarding those counties that created quarantines early in October 1918, Anson County reported significantly lower mortality rates when compared to other North Carolina counties, Durham County reported moderate mortality rates, both Robeson and Wayne County reported elevated mortality rates, and Cumberland County's reported mortality for October 1918 was one of the highest in the state for that month.[186] Durham County, slow to implement quarantine measures, also reported one of the highest mortality rates in October 1918 when compared to other North Carolina counties.[187] While quarantine measures may have proved beneficial in some counties, other factors may have influenced the increased mortality rates in other counties, suggesting that quick quarantine measures alone were not enough to fully impede the spread of influenza in October 1918.

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[184] Ibid., October 18, 1918.
[185] Ibid.
[186] Author's calculation of age-sex-race adjusted county mortality rates accessed from www.ancestry.com and the 1920 United States Census. For more information, see Austin, "Falling Around Us," 2018.
[187] Ibid.

Even after official county quarantines were lifted by local boards of health, restrictions against congregating and gatherings remained in place. Many of these restrictions pertained to businesses and business practices. On October 31,1918, the Stephenson-Belk Company advertised in the *Rockingham Post-Dispatch* that the city quarantine would be lifted the following Monday per the Richmond County Board of Health, with the provision that no more than four customers would be allowed in the store at the same time.[188] The advertisement was large and prominently placed on the newspaper page; the Stephenson-Belk Company was evidently eager to relate to customers that they were allowed to shop once more, to begin recouping the earnings lost during the quarantine, and to get people back into the stores ahead of the approaching Thanksgiving and Christmas shopping seasons even though restrictions were still in place.

As is fitting with the change of perception regarding the epidemic as remarked on by Shylock in the *Health Bulletin* allegorical editorial, many county boards of health reported an uphill battle in dealing with the influenza epidemic in the months following the end of the war on November 11, 1918. One example was the Rowan County Board of Health, which reported in December 1918 that "quarantine and reporting of new cases were not being observed properly."[189] By January 1919 the board was irate that "physicians and citizens had not been complying with the quarantine laws heretofore passed by the board, thus depriving our health officer, Dr. Warren, and the Board of the information they should have daily." This prompted the Rowan County Board of Health to issue a letter of reproach to each physician in the county, reminding them not only was

[188] *The Rockingham Dispatch* (Rockingham, NC), October 31, 1918.
[189] *The Davie Record* (Mocksville, NC), December 18, 1918.

influenza a reportable disease per the board of health and that quarantine placards were still required on all houses containing flu cases, but that North Carolina state law requires that each person found violating these requirements "shall be guilty of a misdemeanor and fined not exceeding $50 or imprisoned not exceeding 30 days. The board of health respectfully calls the especial attention of the doctors to these all-important laws and also wish to remind them that the law will be invoked."[190] At this same meeting, the Rowan County Board of Health acknowledged that the county was still in the midst of the epidemic, with at least 350 cases reported in the county, but that "the board did not feel justified in putting into effect any closing order."[191] What would have prompted quick action in October 1918 by January 1919 only received a nod of acknowledgement.

Thus, preventive measures taken by boards of health at this stage of the epidemic were not always met with appreciation. The February 13, 1919 edition of *The Charlotte Observer* carried a story about the motion picture theaters of nearby Rock Hill, South Carolina community (approximately twenty-five miles away from Charlotte) being denied a restraining order against their local county board of health. Due to the return of the epidemic in Rock Hill in January, the county board of health had deemed it necessary to relieve the situation and, after meeting with physicians and public citizens, ordered that motion picture theaters and other places of amusement be closed several times for short quarantines in January 1919, similar to the much longer quarantines ordered in October 1918. The community's movie theaters filed a restraining order against the county board of health in late January 1919, complaining that the board's actions were "arbitrary and capricious," "discriminatory," and the situation "did not require the closing of schools,

[190] *Yadkin Valley Herald* (Salisbury, NC), January 24, 1919.
[191] Ibid.

churches, manufacturing plants, etc."[192] Far from fearing the epidemic as did so many in October 1918, by early 1919 many citizens were not only "inured" to the influenza epidemic but greatly resented actions taken by their local boards of health to keep them safe. Such a sharp change in feeling towards the official body responsible for keeping the community safe is surprising in the face of so much death and evinces what a quick turnaround many North Carolinians' attitude had regarding the epidemic. Whereas in October 1918 many citizens pleaded for health officials to keep them safe, by December 1918 and thereafter, they wanted health officials to let them live unimpeded by restriction.

The Responses of County Councils of Defense and Chambers of Commerce

When Governor Bickett issued requests to the councils of defense in each county by telegram in early October 1918, the response was immediate. As mentioned previously, the Orange County Council of Defense met promptly, discovered that there was no county board of health, and promptly helped found one.[193] Once the board was established, the local council of defense worked in conjunction with it to provide help to the community as the flu began to spread. The record of the war activities in Orange County notes that "With the appearance of the first case, assistance was given in nursing and furnishing suitable nourishment and necessities by citizens of the town [Hillsboro], and Dr. Spurgeon's family, Rev. Mr. Bradshaw, Miss Nellie Russell, and Mr. Chester Turner were among the first to render aid and continued to do all in their power." The Orange County Council of Defense also worked to organize Red Cross efforts in the area.

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[192] *The Charlotte Observer* (Charlotte, NC), February 13, 1919.
[193] Cameron, "War Activities," 75.

The record of their activities shows detailed and extensive action through the months of October and early November:

> Mr. Chester Turner and Ross Turner (colored) did noble service as volunteer nurses wherever the need arose.
>
> As County Chairman, Mr. T. H. Webb was most active and efficient and untiring in his labors, and was especially helpful when the need was great in the Bellevue district. He and Mrs. Webb sent food and clothing to those in need.
>
> Rev. Mr. Bradshaw worked long and faithfully when the epidemic extended into the town, collecting and delivering nourishment furnished and made by ladies throughout the town. He was assisted in this by Mrs. J. C. Webb driving him to the homes where he had to go, and when it was impossible for Mrs. Webb to continue, a car and driver were furnished by Mr. J. C. Webb for this purpose until the epidemic was past.
>
> As soon as the need for nurses was felt, Miss Henrietta Collins volunteered to go wherever needed, and later Miss Virgie Cole volunteered, but they were not called upon to serve.
>
> The Relief Work was organized and carried on by the County Board of Health, but most if not all workers were members of the Red Cross. Below are the minutes of a meeting held in connection with this work.
>
> A special meeting of the Executive Committee of the Red Cross was held October 26, at 10:00 o'clock in Major Graham's office. There were present Major Graham, Mr. Robertson, Mrs. J. C. Webb, Mrs. W. H. Webb, Mr. T. N. Webb, Mr. N. W. Brown, Miss H. P. Collins, Mr. Bradshaw and Dr. Spurgeon. This meeting was for the purpose of co-operating with the Committee for the Relief of the Influenza Epidemic, of which committee Mr. T. N. Webb is County Chairman. A motion was carried that there be appointed a chairman of a Nursing Committee of each of the two school districts to whom application may be made for nurses to serve anywhere in our jurisdiction, a record of volunteers to be reported to the Secretary, who was to keep it. Mr. T. N. Webb was appointed Chairman of this Committee for the West Hill School District and Miss Russell for the Hillsboro District.
>
> A canvass of the town [Hillsboro] was made the day of this Red Cross meeting to tell the people of the need for nurses and to ask for volunteers who might be called upon if necessary. The Red Cross was asked to furnish gauze face masks and this work was done at the work room as long as a supply was needed.
>
> The ladies of the Red Cross were asked to make garments for the sick in emergency cases, and this was gladly done at a moment's notice. People were very generous in

> furnishing butter-milk and soup not only those in town but a quantity of milk was furnished by people out of town, especially east of town. The Rev. Mr. Hester, Mr. and Mrs. C. H. Robertson, and Mrs. J. C. Webb alternatively collected this milk for use at West Hill and in town.[194]

It is interesting to note that, like the newspaper coverage and actions of the state and local boards of health, the records of the Orange County Council of Defense also show a marked decrease in attention to the epidemic after the early part of November. The record makes note of deaths in and around Hillsboro, NC with specific dates listed through October, a handful of dates listed simply as "Nov. 1918," and after that the names are listed with no dates. It is also noted that in Cedar Grove, NC "There were about 375 cases of Spanish influenza in Cedar Grove Township and only four deaths. The epidemic lasted until the second week in December." It is then noted that, "After Christmas a second epidemic of Spanish influenza spread through the county and was very bad at Cedar Grove, Efland and Hillsboro. However, the schools and churches did not close, and the epidemic gradually died down."[195] In part, this decrease in attention to detail could have been caused by the end of the war and the subsequent disbanding of the county councils of defense around the state. However, the records do note that the Orange County council remained active for at least part of 1919. Therefore, one would expect to find such a detailed account of influenza relief recorded throughout the remainder of the epidemic, not only for October and early November. The only notice that the January resurgence of influenza in the county received in the records was that this "second epidemic… was very bad" but that "the schools and churches did not close." Yet again evidence suggests that by as early as mid-November, attitudes toward the epidemic had changed; relief efforts

[194] Cameron, "War Activities," 76-78.
[195] Cameron, "War Activities," 79.

waned after the war ended since so many groups had originally banded together for the war effort and seem to have lost their purpose after the armistice. Neither the Orange County Board of Health, the Orange County Council of Defense, nor the Orange County Red Cross effort seemed concerned about the epidemic spread after early November.

The records of the Orange County Council of Defense also detail the reaction of the University of North Carolina at Chapel Hill and the surrounding areas to the epidemic. The records note that:

> Shortly after the opening of the University for the year 1918-19 cases of Spanish influenza began to appear. In a short while scores had been stricken with the disease. In the very first days of the epidemic the Red Cross volunteered its services and began helping the physicians. The co-eds of the University were called upon to make face masks for the doctors and nurses in the various emergency hospitals. Two hundred and eighty-six masks were made, as well as one hundred and seventy arm bands for the attendants in the hospital. For weeks Miss Helen Shell, Miss Katherine Bourne and Mrs. Kent Brown did volunteer nursing in the University hospital, while other women were aiding stricken families all over the village. As the epidemic spread to Carrboro the need for volunteer nurses became more imperative. A committee composed of Misses Josie Pritchard and Helen Shell and Mrs. Kent Brown and Mrs. William deB. MacNider, assisted by others, worked night and day relieving the distressing conditions of the stricken people. Mr. J. S. Carr gave the use of the club rooms for a diet kitchen, paying all expenses for the maintenance of the same. Mrs. R. B. Lawson and Mrs. Arthur Blackwood volunteered to take charge of the kitchen and for two weeks served nourishing meals of soup, bread and milk. At least seven gallons of soup were served daily. Each morning two orderlies visited the various homes of the village to obtain an accurate report of the needs of the people, so that these needs might be supplied. This record would be incomplete without mentioning Miss Roper, who left a remunerative position as nurse for Mrs. McDade and ministered to the University boys afflicted with influenza. Although ill herself, for days she stayed at her post until forced by the physicians to give up. In a few days pneumonia developed, and this brave woman died, having truly given her life for others.[196]

The university campus was quarantined in October, with second-year medical students and local nurses recruited to work in the overflowing infirmary. Concerned

[196] Cameron, "War Activities," 26.

parents of students wrote to university president Edward Kidder Graham, fearful for their children.[197] One such parent from Lenoir, North Carolina (located on the border of the Piedmont and Mountain Regions) implored Graham on October 7, 1918 to notify him by telegram should his son become ill:

> My Dear Doctor: -
>
> I am sure you are a very busy man, and I do not want to unnecessarily tax your time.
>
> We are, however, very much concerned about the health conditions at the University. Should our son John take the influenza, and his condition in any sense be serious, please notify me of same by wire at my expense.
>
> Trusting that you may not have an epidemic of influenza, I am,
>
> Sincerely Yours,
>
> J.L. Nelson.[198]

While Graham's response to Mr. Nelson is not contained in the archives, his response to a similar letter from a Mr. E. Payson Willard from Wilmington, North Carolina (located in the Tidewater Region) is available. On October 19, 1918, Graham wrote to Willard:

> My dear Mr. Willard:
>
> Referring to your letter of October 16 directed to Dr. W.S. Rankin in re the influenza epidemic and the University of North Carolina: there are thirty cases in the hospital. This shows a steady decrease from the maximum of about one hundred and thirty. There are twenty in the convalescence building. These men are virtually well; they are simply being detained there as a precaution.
>
> If you will indicate to our Registrar, Dr. T.J. Wilson what point in the subsidence of the disease you will consider safe, Dr. Wilson will notify you with pleasure when that point is reached. The facts in regard to the situation are posted daily in

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[197] Jennifer Coggins, "The Flu Pandemic of 1918-1919 at UNC." *For the Record: News and Perspectives from University Archives and Records Management Services.* February 6, 2013.
[198] Letter from Mr. J.L. Nelson to Dr. Edward Kidder Graham. October 7, 1918. University of North Carolina Papers, 1757-1935, #40005, Folder 1277, University Archives, The Wilson Library, University of North Carolina at Chapel Hill.

> the Registrar's office and on the Military Bulletin Boards. Please suggest to Dr. Wilson any specific matters that you would like to get the facts about.
>
> Cordially Yours,
>
> President.[199]

However, only two days after writing the above letter, Graham himself fell ill. Within days, he developed the pneumonia that so often followed influenza in the fall of 1918. As Graham's condition worsened and the campus grew concerned about his condition, the Student Army Training Corps (SATC) commander asked that students not disturb the university president by marching or performing drills near his house. After an illness of less than week, Graham died from influenza-related pneumonia. The next day, all classes and military drills were cancelled, and students were asked to "demean themselves in a quiet manner" in respect for the president. Throughout November 1918, the war ended, the SATC disbanded, and the severity of the influenza crisis appeared to wane. Over the course of the epidemic on the University's campus, over 500 were treated for influenza in the infirmary and seven were recorded as having died – three students, one nurse, two University officials (Graham and Stacy), and one mother who caught the disease while caring for her ill son.[200] Again, the overwhelming majority of what is contained in the university archives pertaining to the epidemic comes from October and November 1918; there are not many, if any, references to influenza efforts in the early months of 1919.

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[199] Letter from Dr. Edward Kidder Graham to Mr. E. Payson Willard. October 19, 1918. University of North Carolina Papers, 1757-1935, #40005, Folder 1278.
[200] Jennifer Coggins, "The Flu at UNC."

North Carolina State College located in Raleigh, North Carolina (now known as North Carolina State University) underwent a similar experience during the epidemic. The entire student body of approximately 1,000 students was organized into six military regiments, an immediately deployable reserve force if needed in World War I. The military also established Camp Polk, a tank operation and maintenance training camp, across the street from the college. With such crowding in and around the campus, influenza spread quickly in late September and early October 1918.[201] Ella McGuire, a longtime cook, laundress, maid, and general house-cleaner at the North Carolina State College infirmary, remarked about her experience of the influenza epidemic on campus:

> Da wurst time we ever had here was during the epidemic of flu. Lawdy, uverthing was full den, upstairs, downstairs, Y.M.C.A., en everthing. It was wartimes den, all the boys wore soldeer soots, de tank camps were over in de Fair Grounds, you know. Dey brought dem boys over here in dem stretchers and I'll declare, sometimes dey would not live three hours. And all dem good white folks coming over here working and exposing demselves. Some of them took it, too, and died, too. Yes, sir, dem wus terrible times, to be sure [*sic*].[202]

The North Carolina State College yearbook, *The Agromeck*, published in its 1919 edition a memorial to the thirteen students who died during the influenza epidemic. They also memorialized two local young women, Miss Eliza Reddick and Miss Lucy Page, who "died while nursing State College boys during influenza epidemic."[203] As seen in Chapel Hill, the North Carolina State College experience was largely limited to the fall of

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[201] Todd Kosmerick, "Students Explore the 1918 Influenza Pandemic at NC State." *NCSU Libraries News*, Special Collections. March 27, 2018. https://www.lib.ncsu.edu/news/special-collections/students-explore-the-1918-influenza-pandemic-at-nc-state

[202] "Have You Ever Met Aunt Ella McGuire?" *The Technician* 6:9 (November 6, 1925), 8. The author's use of dialect in this article demonstrates the influence of segregation in North Carolina at the time of the epidemic. While Ella McGuire was obviously a beloved employee of North Carolina State College at the time of the interview based on the information about her contained within the article, the author chose to type out her statement phonetically, with emphasis on her mispronunciations and grammatical errors. This over-exaggeration of Ms. McGuire's dialect seems specifically intended to point out her socioeconomic status and race, to readers, despite her years of service to the school and good reputation on the campus.

[203] North Carolina State University, *The Agromeck* 17 (1919), preface.

1918; few, if any, reference to the epidemic exist in the university archives after December 1918.

The records of the minutes of the board of directors of the Durham County Chamber of Commerce also reflect similar attitudes and outcomes. There is no mention of the epidemic in the board's minutes until October 19, 1918. At this meeting, the directors made the following resolutions regarding the epidemic:

> The President stated that the services of the Chamber of Commerce had been offered to the Board of Health in stamping out the epidemic of Influenza. He also stated that the Chamber of Commerce had been requested by the Board of Health to make arrangements for the delivery of food stuffs, fuel, etc., to families stricken with influenza who are unable to make such arrangements for themselves.
>
> Upon motion of Director Rosenstein, seconded by Director Figgatt, the Chamber of Commerce authorized expenditure of an amount not to exceed $250.00, if necessary in handling the Influenza situation and the President was instructed to appoint a committee of three, who together with the President and Secretary should co-operate with the Board of Health in any way they deem advisable.[204]

A scant update was provided a few days later at the October 22, 1918 meeting:

> Mr. Miles F. Figgatt, Chairman of the Committee on Influenza epidemic, reported that the services of the Chamber of Commerce had been offered unreservedly to the Board of Health in stamping out this epidemic; that the Board of Health had requested our assistance in having groceries, fuel, etc., delivered [*sic*] families stricken with influenza, and that this committee has handled and relieved every case referred to them by the Board of Health.[205]

A final update was provided at the November 5 meeting:

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[204] "By-Laws, Meeting Minutes, Correspondence to Board Members," October 19, 1918, Box 4, Greater Durham Chamber of Commerce Records, David M. Rubenstein Rare Book & Manuscript Library, Duke University.
[205] Ibid., October 22, 1918.

> Director Figgatt, Chairman of the Relief Committee Influenza Epidemic, stated that his committee had handled thirty or forty charity cases at the request of the Board of Health and Board of Charities.[206]

No further mention of the epidemic or any further influenza relief effort on the part of the Chamber of Commerce was made in the minutes after November 5, 1918. The records and minutes of these county-level councils of defense and chambers of commerce indicate that after the war ended on November 11, 1918, the main focus of these community programs was on the return of soldiers. In fact, the Nation Council of Defense requested in early December that the state and local councils remain active, "to keep their organizations" and "undertake immediate and important duties."[207] Many areas of North Carolina were experiencing a resurgence of influenza cases in December 1918, with many families still in need of assistance but the request of the Council of Defense made no mention of continuance of relief to influenza victims. Rather, the National Council of Defense asked for state and particularly local councils to "specially concern themselves with the interests of returning soldiers," to include "not only glorification, but practical aid." The fact that returning soldiers may have trouble returning to their home life seemed to be understood, as the National Council of Defense urged the "good citizens of North Carolina… to keep their eyes open for opportunities to help the local councils of defense in the important work of readjustment from a state of war to a state of peace… to [help] our defenders…find places in which they can be independent, contented, productive citizens."[208] However, there is no mention of the local councils of defense being meant to continue epidemic relief efforts. Yet again, it is evident that after early

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[206] Ibid., November 5, 1918.
[207] *The High Point Enterprise* (High Point, NC), December 11, 1918.
[208] Ibid.

November 1918, the influenza epidemic had largely been pushed aside in favor of returning soldiers, a return to normalcy, and instructions by state and local officials to focus on the good instead of the bad.

The Responses of Local Community-Level Schools

It appears as though every school district across North Carolina was closed for some period of time spanning October to November 1918. This was done at the urging of Governor Bickett and the State Board of Health, so these closures did not differ widely across the state. However, what did differ was the varied response to the fate of teachers during that time, how children should spend their time, and when schools would be allowed to reopen.

Many district superintendents were reportedly hesitant to pay teachers employed in schools forced to close down because of the influenza epidemic, sparking concern from teachers across the state about how long the closures would last and how they would afford to live during that time. Dr. J.Y. Jordan, the State Superintendent of Public Instruction released a statement on October 24, 1918 which informed readers that:

> Teachers in schools that have been closed on account of the epidemic of Spanish influenza are legally and morally entitled to draw their salaries under their contract for the time intervening between the closing of the schools and the reopening of the same. The living expenses of the teachers continue whether school keeps or closes. Their traveling expenses to and from home, in case they do not live in the community, are considerable. They are not responsible for the closing of the schools. Their salaries are meagre at best, and simple justice demands that they should be paid their regular salaries under their contract until the schools reopen. I am advised by the attorney general that this is the law and I am sure that it is in accordance with the Gospel. I trust, therefore, that all superintendents and boards of education and school trustees will see that the teachers are not allowed to suffer a cut in their salaries because of the closing of the schools on account of a dangerous and unavoidable epidemic.[209]

[209] *The Carolina Mountaineer and Waynesville Courier* (Waynesville, NC), October 24, 1918.

This decision was publicly supported, with one school superintendent noting that "it would be better to pay the teacher than to have to pay the undertaker."[210] However, teachers were not expected to sit idle during this time. The October 11 edition of *The Charlotte News* reported that the local health department issued a call to teachers who were "unemployed" due to the epidemic "to make a house to house canvas of the city and ascertain the number of people who are sick" in order to complete a census of the city's flu victims.[211] Teachers were also encouraged to volunteer as nurses instead of staying at home like the rest of the public, largely because it was felt that they had "plenty of time on their hands" with schools being closed.[212] Plenty of teachers answered the call. From Gastonia, at least twenty-two teachers volunteered to act as nurses and no less than five from Charlotte volunteered at the local Presbyterian Hospital.[213]

A further concern at the community level was what to do with the state's children while schools were closed. One solution for this also involved the same "idle" teachers as previously mentioned. The "Junior Observer" column of *The Charlotte Observer* noted that:

> There are thousands of children in Charlotte extremely impatient by the reason of the fact that the schools are closed on account of the quarantine, and it seems to me that they would welcome an opportunity to be of service to the farmers during their enforced idleness. The farmers of the county are in dire need of labor to gather the cotton crop. It's clean, pleasant work, and it appears to me that many of the pupils of the schools, both girls and boys, would be glad of the opportunity to keep busy, and at the same time earn quite a sum during this 'vacation.' I would suggest that the teachers of the various classes, likewise idle, might accompany

[210] *The Warren Record* (Warrenton, NC), February 4, 1919.
[211] *The Charlotte News and Evening Chronicle* (Charlotte, NC), October 11, 1918.
[212] Ibid.
[213] Ibid.

> their pupils to the cotton fields, and in this way the affair would be robbed of any feature which might be criticized.[214]

The Chamber of Commerce of the Vance County seat, Henderson, decided to not only reflect on this possibility but put it into action. It capitalized on the Vance County Board of Health's closure of the schools by issuing a countywide cotton-picking contest to see if all the cotton in the county could be picked by the boys and girls, both black and white, while they were out of school.[215] The students and faculty of the Salisbury Normal and Industrial Institute volunteered to pick cotton for Mecklenburg County farmers in exchange for train fare.[216] School-aged boys in Gastonia were reportedly "anxious to go to the country and pick cotton if the farmers will take them out in the morning and bring them back in the afternoon" during the quarantine and school closures.[217] Local boards of education supported this movement and urged their students to keep themselves busy harvesting crops while schools were closed for quarantine. Children all across the state were urged to "hasten to the cotton fields" in order to restore health and order back to North Carolina. The plan for children to pick the state's cotton crop in the face of a large-scale labor shortage due to the war was touted as a way to end the epidemic:

> If they will go to the fields, breathe the air of the kindly country and bathe in the sunshine of a day that has no equal in all the seasons, they will bring health back to North Carolina more rapidly than all the doctors, all the nurses, all the nostrums, all the medications in Christendom.
>
> If they will go at once to these cotton fields they will starve the influenza epidemic which sweeps like a sulfurous sirocco over the land of the long leaf pine. They will save hundreds of their own lives, of their parents and neighbors, and millions in money that had been wasted by the costliest of unnecessary things,

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[214] *The Charlotte Observer* (Charlotte, NC), October 20, 1918.
[215] *News and Observer* (Raleigh, NC), October 8, 1918.
[216] *The Charlotte Observer* (Charlotte, NC), October 6, 1918.
[217] *The Gastonia Gazette* (Gastonia, NC), October 12, 1918.

preventable illness.[218]

This plea for youth help in the cotton fields of North Carolina during enforced school closures is interesting for several reasons. First, all across the state individuals were being ordered to stay home unless they absolutely had to go out; there was a non-mandatory but heavily implied state quarantine in effect. However, every school-aged child was being encouraged to join together, use group transportation, mingle with others, and seemingly expose themselves to influenza in order to pick the state's cotton crop. Second, it is evident that not only was this contradiction not noted, it was also assumed that the fresh air of the fields would negate the other potentially hazardous conditions brought about by constantly shuffling all of the state's children back and forth to the cotton fields. Third, this plan to have children go out to their local farms and help pick cotton was touted even as a solution for the epidemic itself, a maneuver that was obviously designed less to benefit the overall health of North Carolina's citizens than benefit their economy. Kids of all ages and their parents were urged to take part in the picking of their local cotton crop so as to avoid the economy losing money; even those children too young to pick cotton were urged to still help in the fields. While it is important to note that North Carolina's cotton crop was a large part of the local economy in the early twentieth century and many local businesses would suffer if the crop were not harvested, it is equally important to note the juxtaposition of local officials across the state closing schools in order to protect children from influenza then heavily encouraging those same children to risk catching influenza by repeatedly traveling together to cotton fields.

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[218] *Greensboro Daily News* (Greensboro, NC), October 22, 1918.

By the end of October and early November 1918, schools were beginning to reopen. There was an effort to squeeze in a semester of work so that students would not be so far behind. The *Durham Morning Herald* reported on November 14, 1918 that schools had begun to reopen the previous Monday, with the remainder of the county schools expected to reopen the following week. The board of health had rescinded the ban on schools the previous week but had left the matter of when to reopen entirely at the discretion of the school committeemen.[219] The choice of leaving the decision of when to reopen up to each district seems to have been common. On November 2, 1918, the assistant county superintendent of education announced that Mecklenburg County schools would be closed for another week "but a few of them may open if conditions in their immediate neighborhood warrant such a move." The matter of reopening the schools was "left to the discretion of the school board of that particular section and the county health officials."[220]

Resurgences of the influenza caused school closures to be repeated, although for much shorter lengths of time than occurred in October. After the large-scale quarantines of October had passed, local boards of education seemed content to let each district make their own decision regarding the fate of their schools.[221] In Warrenton, NC, the board of education, in conjunction with the board of health, ordered on February 4, 1919 that the public schools of Warren County be closed for the remainder of the term. However, they

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[219] *The Durham Morning Herald* (Durham, NC), November 14, 1918.
[220] *The Charlotte Observer* (Charlotte, NC), November 2, 1918.
[221] It was not until 1921 that the General Assembly of North Carolina authorized the State Board of Education to create formal city school districts and placed certain normal schools under the State Board's control. Prior to that date, school 'districts' were cities, towns, villages, or other communities found within the county which operated their own schools. For more information see, "North Carolina State Board of Education, History of State Board of Health, Chapter Two," https://stateboard.ncpublicschools.gov/about-sbe/history/chapter-two

provided that "districts may, upon petition in writing filed with the County Superintendent of Schools, keep the schools of said districts open." Also, "high schools or any department of the high school, may remain open with the consent of the School Committee of the High School District."[222] This tentative closure that could be overruled by the committeemen of each district seemed to be a widespread decision starting in December 1918, with many school officials certain that there was no reason to keep all school closed for the remainder of the term.

Perhaps no school district fought such a battle between the threat of influenza and a return to normalcy as did that of Lenoir, North Carolina. Situated in Caldwell County, which straddles the line between the Mountain and Piedmont regions, Lenoir, along with the rest of the county, experienced moderate influenza mortality levels in October 1918 (851.83 per 100,000) when compared to other North Carolina counties, but significantly elevated influenza in March 1919 (253.40 per 100,000).[223] Like the majority of North Carolina counties, the Caldwell County Board of Health was quick to take action once the first case of influenza was reported in its area. Around October 2, 1918, the Lenoir schools were closed, with hopes that they could reopen soon for the balance of the term.[224] By October 25, 1918, a full quarantine was put in place and all public schools, churches, places of amusement, and other indoor gatherings were officially suspended indefinitely.[225] Up until that point, there had been sporadic reports of influenza within the county but by the last week of October enough new cases had arisen to justify closing the

[222] *The Warren Records* (Warrenton, NC), February 4, 1919.
[223] Author's calculations of age-sex-race adjusted county mortality rates accessed from www.ancestry.com and the 1920 United States Census. For more information, see Austin, "Falling Around Us," 2018.
[224] Dula v. School Trustees, 177 N.C. 426 (N.C. 1919).
[225] *The Lenoir Topic* (Lenoir, NC), October 25, 1918.

mill and imposing a quarantine, the violation of which was punishable by law. By December 13, the schools of Lenoir were still not open. Superintendent Horace Sisk stated that due to the epidemic and the approaching Christmas season, one could hardly expect to get schools opened before December 30, but they confidently hoped to begin school in earnest on that date.[226] The schools had been closed since the last week of October and many residents were anxious that they reopen.

However, this was not to be. Further spread of influenza during the holiday season, most likely due to the increased traveling, party attendance, and holiday shopping done by residents, caused the Caldwell County Board of Health to call a mass meeting to decide on the question of removing the quarantine pertaining to the school. The meeting decided to continue the quarantine and cancel the entire spring term of school, meaning that the Lenoir Graded School system would have not been in session from October 1918 until September 1919. Those in favor of the schools opening for the spring term were angry, arguing that the meeting was not representative of the citizens of the school district because many did not attend the meeting. Due to the petition, the board of health called for an open vote. The next day, January 10, *The Charlotte Observer* published an article with the bolded headline: "Lenoir Public Schools Closed Till Next Fall: People So Decide by Vote of 150 to 70 After Bitter Fight. 'Flu' the Reason."[227]

This decision did not sit well with those eager to reopen the schools for the spring term. Many citizens felt that the trustees of the school may have been using the influenza epidemic as an excuse to cover up other failings of the school district. Citizen Edmund Jones wrote to *The Lenoir News* editor that:

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[226] Ibid., December 13, 1918.
[227] *The Charlotte Observer* (Charlotte, NC), January 10, 1919.

> It does seem that as if those entrusted with the affairs of the Lenoir graded schools have fallen into a grievous error of judgement. The money paid into their hands was levied and collected to carry on the schools, not to close them up. It is the trustees that are responsible and it is no answer for what looks like an abandonment of their trust to attempt to take shelter behind a meeting of citizens, however representative or intelligent it may have been. The deplorable action of the trustes [*sic*] raises several perplexing questions. Do they continue to pay the teachers to the end of the year? If not, they are subjecting them to a great hardship. If they do pay them they are imposing a great waste of public funds upon their constituency.
>
> If the schools are in financial difficulty, and the school taxes for the year 1918-19 are needed to pay past debts or to make further improvements for next term, their action should rest upon the true basis, and not load it off on the influenza, which has sins enough of its own to account for. The action of the trustees is calculated to bring discredit upon the community, and it is earnestly to be hoped that they will reconsider.[228]

The trustees did not reconsider, however. Neither did the county board of health. The decision to close the schools until September 1919 still stood. The faction seeking to reopen the schools challenged the school district's decision in court. Their main argument was that their children would not advance a grade when school resumed in the fall of 1919, having missed the entire 1918-19 school year. They felt that this decision demonstrated that the school trustees did not have the welfare of their children in mind and were perhaps working towards some other goal, as referenced in Mr. Jones' letter to the editor of *The Lenoir Topic.* After the lower court found in favor of the school district, the North Carolina Supreme Court heard the case. It affirmed the finding of the lower court, stating that "there [was] no finding that [the school trustees] have not been using their best efforts to promote the public welfare, or that they have been arbitrary."[229]

With that decision, the North Carolina court system simply upheld and respected the town of Lenoir's decision that had been made at a public meeting and through a

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[228] *The Lenoir Topic* (Lenoir, NC), January 3, 1919.
[229] Dula v. School Trustees.

public vote.[230] However, the push from parents and citizens to go against the wishes of the Caldwell County Board of Health and Board of Education despite the fact that the county was in the middle of fighting a resurgence of influenza that "doctors could not control"[231] in January 1919 is another example of how overall feelings towards the epidemic had rapidly changed over the late fall and early winter months. In middle to late October 1918, the decision by the Caldwell County Boards of Health and Education to close the schools was met with resounding approval. But by January 1919, such decisions were questioned as lacking moral and fiscal responsibility, as well as ignoring the welfare of the county's children. While still in the middle of the epidemic cycle, Lenoir school district trustees were publicly suspected of using the deadly influenza epidemic to cover up misdeeds of some nature. Perhaps being told to not make a fuss out of the epidemic in October 1918 in light of the ongoing war effort and the need for both the nation and state to present a united front in dealing with World War I caused North Carolina's citizens to not only quickly inure themselves to the horrors of the influenza but also to quietly and complacently lift the burden onto their own shoulders. If so, then perhaps within a very short period of time, they came to resent any effort of state or local involvement in matters relating to the epidemic.

The Reponses of Local Mills and Other Businesses

Scholars contend that the 1918-1919 epidemic provided both positive and negative labor economic outcomes. Most research indicates that the economic effects of

[230] Jason Marisam, "Local Governance and Pandemics: Lessons from the 1918 Flu." University of Detroit Mercy Law Review 85 (2007): p. 347.
[231] Dula v. School Trustees.

the epidemic were short-term.[232] Some research suggests that the epidemic was a contributing factor to post World War I recessions and that states with higher influenza mortality also had higher business failures between 1918 and 1921, creating further economic shock that bounced back with an expected economic boost between 1921 and 1930.[233] Many businesses, especially those focused on amusement or entertainment, suffered heavy losses in revenue during the epidemic cycle.[234] Other businesses that specialized in health care products experienced an increase in revenue. One example of this was the Vick's VapoRub Company. Founded in Selma, North Carolina, the VapoRub Company owned by the Richardson family published advertisements during the epidemic that touted the use of their product to both ward off and relieve the suffering from influenza. One such advertisement claimed that, "the influenza germs attack the lining of the air passages. When VapoRub is applied over throat and chest, the medicated vapors inhaled loosen the phlegm, open the air passages and stimulate the mucous membrane to throw off the germs."[235] The company boasted their popularity, publishing a subsequent advertisement stating that three million jars had been shipped during October alone and that even though the epidemic was waning, druggists were encouraged to continue heavily selling VapoRub as a preventative.[236] The company also published other ways in which to use their product around the house to prevent influenza, the most popular of

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[232] Thomas A. Garrett, "Economic Effects of the 1918 Influenza Pandemic: Implications for a Modern-day Pandemic." Federal Reserve Bank of St. Louis, 2007. https://www.stlouisfed.org/~/media/Files/PDFs/Community-Development/Research-Reports/pandemic_flu_report.pdf

[233] Elizabeth Brainerd and Mark V.Siegler. "The Economic Effects of the 1918 Influenza Pandemic." (2003), p. 30. http://www.birdflubook.org/resources/brainerd1.pdf.

[234] Thomas A. Garrett, "Economic Effects."

[235] Richardson-Vicks, Inc., Records #4468, Folder 857, Southern Historical Collection, The Wilson Library, University of North Carolina at Chapel Hill.

[236] Ibid.

which was steaming a half teaspoon of VapoRub in a tea kettle and letting the steam cloud the room.[237] The advertisements proved fruitful; during the epidemic the company produced twenty-four hours a day and sales increased from $900,000 to $2.9 million in just one year.[238]

However, many economic concerns stemming from the epidemic were more local in nature. The fate of teachers' salaries and potential unemployment was not the only labor concern in North Carolina counties and communities during the epidemic. Mill towns, which were vital to the war effort, were a large part of the labor system and economy of the state at the time. The industrial editor of *The Charlotte Observer* wrote in November 1918 that, "The people here [in the mills of Alamance County] are of a fine type, intelligent and steady workers. Born and raised in that section of the state, most of them have chosen to follow their work in the land of their birth, and there is little moving about in these mill communities."[239] These areas often boasted large populations living in often cramped quarters and working in crowded conditions. In the view of contemporaries such as mill owner Stewart Warren Cramer,[240] mills and factories seemed especially susceptible to the spread of contagious and infectious diseases.[241] Thus, local

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[237] Ibid.
[238] Richardson-Vicks, Inc., Historical Information, http://finding-aids.lib.unc.edu/04468/
[239] *The Charlotte Observer* (Charlotte, NC), November 10, 1918.
[240] Letter from Mr. Stewart Warren Cramer to the Honorable Daniel G. Roper, October 19, 1918. Claude Kitchin Papers, #406, Folder 474. Stuart Warren Cramer was born in Thomasville, North Carolina in 1868. A graduate of the U.S. Naval Academy, Cramer returned to his native state and began the establishment of his own engineering and contracting firm in Charlotte, NC to build textile mills. Over the next ten years, he designed and/or equipped about one-third of the new cotton mills in the South. He used the profits from his firm to build his own textile mills, especially those at Cramerton (originally known as Mayworth) in Gaston County, North Carolina. Cramer designed Cramerton as a model mill community, complete with schools, churches, recreation centers, playgrounds, and other embellishments to ensure that his workers had the best living conditions in the textile community. Thomas S. Morgan, "Cramer, Stuart Warren," *Dictionary of North Carolina* Biography, 1979. https://www.ncpedia.org/biography/cramer-stuart-warren
[241] Annette Cox, "Towels, Socks, and Denim: World War I and North Carolina's Cotton Mills," in *North Carolina during the First World War*, Edited by Shepherd W. McKinley and Steven Sabol (Knoxville: University of Tennessee Press, 2018), forthcoming.

health boards across North Carolina mandated the closure of numerous mills and factories during the height of the epidemic.[242]

On October 8, 1918, Thomas H. Battle, Treasurer of Rocky Mount Mills, wrote to Colonel Bennehan Cameron that:

> I feel it my duty to advise you not to come to our meeting on 15 on account of this awful grip epidemic. We will have the meeting all right but I am advising out of town friends not to come. The trains are infected and our community is full of it. We have shut the Mill down this week to help clear up the situation. And there are twelve cases right in Ricks Hotel. Everybody had better stay at home for a while. I certainly hope you and your people will escape this epidemic. I think our fair spread it awfully.[243]

Not only did the town of Rocky Mount, NC have to close its cotton yarn manufacturing mill, but the populace seems to have been overcome with influenza cases due to the rapid spread of the disease through a fair held in the town either right before or directly after Governor Bickett called for a voluntary quarantine in early October 1918. The alarming statement that "the trains are infected" suggests that travel in and out of Rocky Mount at this time helped spread influenza far and wide across the state.

On October 12, 1918, the *Durham Morning Herald* reported that "the first real blow to manufacturing in the city" had been realized when Mill No. 1 of the Erwin Cotton Mills Company was ordered to be closed by the board of health the day before, and Mill No. 4 operating with a limited workforce due to influenza cases. The East Durham Cotton Manufacturing Company was similarly handicapped, and tobacco

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[242] Letter from Mr. Stewart Warren Cramer to the Honorable Daniel G. Roper, October 19, 1918. Claude Kitchin Papers, #406, Folder 474.

[243] Letter from Thomas H. Battle to Colonel Bennehan Cameron, October 8, 1918. Bennehan Cameron Papers, #03623, Folder 606, Southern Historical Collection, The Wilson Library, University of North Carolina at Chapel Hill.

factories were reporting a severe hold up in operation due to workforce absences.[244] Mills in Lincolnton were so short staffed that a cotton mill manager reported that "the situation is such in his mill that if he runs night shift, it will be necessary for him to run a set of frames himself, there being so many workers out of the mill with flu."[245] At this time, closures were deemed temporary solutions to stopping the spread of the epidemics, with hopes that work would resume in full within the week.

The closures, however short-lived they were hoped to be, prompted not only concerns about production levels but also the ability of the mill towns to meet their Liberty Loan quotas. On October 19, 1918, Mr. Stuart W. Cramer, owner of Cramerton Mills (still known as Mays Mills until 1922) in Cramerton, NC (known as Mayworth, NC at the time of the epidemic) in Gaston County wrote to the Honorable Daniel C. Roper of the Treasury Department of the Bureau of Internal Revenue:

> I am very glad to report that we have been able to put over the Liberty Loans in about all the mill towns in this section; as to whether the results to-night will show the same for the country and other districts, I am unable to say. The mill towns in the South, however, will undoubtedly all subscribe their quota and over. The mill companies are having to really make the subscriptions. One thing that has militated against us was the extra expense placed on the operatives on account of the influenza, and the compulsory stoppage of the mills by the Board of Health. In that connection, you may be interested to see a copy of the notice that I put in our mills as soon as I returned home and found the situation to be serious.
>
> The cut in our productions at the two mills will lessen our income by probably $100,00.00; the actual expense to us in paying the operatives during their sickness and enforced idleness, and other help, will amount to over $20,000.00 to $40,000.00 additional.
>
> Most of the towns are pretty badly hit with influenza, and quite a few deaths at that.

[244] *Durham Morning Herald* (Durham, NC), October 12, 1918.
[245] *The Lincoln County News* (Lincolnton, NC), October 14, 1918.

> I thought you would be interested in this Liberty Loan situation, and how the influenza has affected it, hence my letter.[246]

This letter references a notification placed in the mills of Mr. Cramer. This notice, copied below, demonstrates that not only were mill owners worried about the cost of lost production during the periods of "enforced idleness" but also about the overall health of their workers. Mill owners, recognizing that more production would be lost in the long-term if many of their workers died from illness, were often quick to impose relief programs for their workers while also making sure that the regulations placed on them by the local boards of health were met.

> October 16, 1918
>
> The Gaston County Board of Health has ordered all the mills in Gaston County to close for one week beginning Friday, October 18. The mill, therefore, will not resume operations on Thursday, as stated in our recent notice, nor for a week thereafter unless further notice is given.
>
> During this time all the sick operatives will receive half time, and all the other mill operatives, not provided with regular work, will also be paid one half time under the following conditions:
>
> 1. All operatives must report to their overseers at 8:00 o'clock A.M. – 12:00 o'clock P.M. and 6 P.M. at theatre.
>
> 2. That at the time they report, they will be expected to carry medicine, food, etc. from the dispensary to such sick people as are unable to help themselves, and who require assistants from the mill company.
>
> 3. No one will be paid half time who leaves town.
>
> 4. Sick people will be required to remain at home.
>
> The mill company is planning to take care of everybody that needs its help and is counting upon all the people of Mayworth to help out, by co-operating with the Relief Association in its works. [247]

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[246] Letter from Mr. Stewart Warren Cramer to the Honorable Daniel G. Roper, October 19, 1918. Claude Kitchin Papers, #406, Folder 474.
[247] Ibid.

It is interesting to note that mill workers, while officially on leave per the Gaston County Board of Health, were not only expected to report to work three times a day but were also expected to provide assistance to the sick if they were not sick themselves. They were forbidden to leave town, not only to ensure that they would be available to resume work as soon as the county lifted the mill closure regulation, but also to comply with quarantine regulations. The overall feeling imparted is that of the mill working as a community, almost a family unit, to ensure that each worker was provided with the assistance needed during the epidemic.

The same feeling was conveyed at other mills in the state. The records of the war activities in Orange County notes that the Eno Mill district was very active in making sure that employees there were fed and cared for:

> When the epidemic spread to the Eno Mill district, the officials of the mill opened a diet kitchen at the West Hill school, and financed it for about seven weeks. Miss Elizabeth Cornelius, Home Demonstration Agent, was placed in charge of this undertaking and proved herself most efficient and faithful throughout the long siege. Without her it could not have been accomplished. Mr. C. H. Robertson supervised this work and rendered every assistance possible, and as chairman of West Hill was untiring in his efforts to do everything in his power. Misses Emma Robertson and Mildred Durham were Miss Cornelius' assistants during the entire time and Miss Rebecca Wall also rendered valuable aid for several weeks. As many as 150 people were fed daily for some time, and an average of 90 for most of the time. Not only the sick were furnished with nourishment, but the families with no one to cook or provide for them were furnished with the proper diet. Mrs. Emerson and Miss Allie Graham were secured by the Mill to do nursing, and Miss Duncan, the deaconess at the Mills, with these two, rendered most valuable service and gave unstintingly of their time and strength. After preparing the nourishment the ladies at the diet kitchen went with the nurses to deliver it where it was needed.
>
> Eno Mill also secured another trained nurse, Miss Whitfield, and Bellevue Mill secured Miss Smith from Durham.[248]

[248] Cameron, "War Activities," 76.

Additionally, Mr. K.P. Lewis of the Erwin Mills in Durham reported that "the mills were making every effort to give assistance. Additional calls have been sent out for nurses, and every available man and woman has been divided into districts, and an organized plan of relief has been worked out."[249]

The records of the Rowan County Influenza Emergency Committee, formed by the Salisbury Red Cross and headed by Mrs. Elizabeth B. Henderson Cotten, show that the largest monetary supporters of their volunteer relief fund were local mills. A list of contributions shows that Kesler Cotton Mills and Salisbury Cotton Mills each donated $250.00 to the fund, totaling nearly half of the $1,214.50 raised. The report also lists the employees of each of the mills who donated their time to the relief effort through nursing, driving, cooking, and serving meals. Both Erwin Mills and Salisbury Cotton Mills supplied numerous volunteers for all areas of need, with Erwin Mills reporting that their employees alone made and served 1,350 soups and meals during the epidemic.[250]

In some instances, mill owners and managers intervened in military enlistment orders to ensure the continued care of their workers. In a telegram dated October 14, 1918, the president of the Patterson Mills Company of Rosemary, NC wrote an appeal to the Honorable Claude Kitchin, one of the area's Congressional representatives:

> Our regular Dr. John W Martin volunteered his services some time ago/Has been accepted and instructed to report for duty next week/This community has 800 cases of influenza with four doctors one of whom is practically exhausted/We cannot secure another doctor/Would thank you to try to get extension of thirty days time for Dr. Martin/If not two weeks would be great assistance.[251]

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[249] *Durham Morning Herald* (Durham, NC), October 12, 1918.
[250] Elizabeth B. Henderson Cotten. "Rowan County Influenza Emergency Committee." World War I Papers, Military Collection, Box 3 Folder 2, State Archives of North Carolina.
[251] Telegram from Mr. J.A. Moore to the Honorable Claude Kitchin, October 14, 1918. Claude Kitchin Papers, #406, Folder 475.

A reply was obviously not received quickly enough, for the president, J.A. Moore, wrote again to Representative Kitchin three days later:

> I took the liberty of wiring you relative to Dr. John W. Martin on October 14, requesting you to see the Surgeon General and urge him to allow Dr. Martin an extension of two weeks to thirty days.
>
> He has been ordered to report on October 23 for government service, but we are in the midst of this influenza epidemic with about eight hundred cases in this community, and Dr. Martin's leaving would badly cripple the forces fighting it.
>
> I will appreciate anything you may do, and regret to impose upon you with this request.[252]

In fact, Representative Kitchin had received and acted upon the first telegram. In a letter dated October 19, 1918, an officer in the Sanitary Corps of the United States Army, Major C.W. Ayars, informed Mr. Kitchin about the decision reached regarding Dr. Martin:

> The Acting Surgeon General desires me to acknowledge receipt of your communication of October 15, 1918 with telegram from Mr. Patterson Miller [*sic*] of Roanoke Rapids, North Carolina, in which he requests that Dr. John W. Martin be granted an extension of time in which to comply with order placing him on active duty in the Medical Corps, The United States Army, and to state that this office has this date recommended to The Adjutant General of the Army that Dr. Martin be granted a further delay of fifteen days.[253]

Through this exchange and other actions taken in mill towns across the state, it can be seen that mill owners and presidents were anxious to provide the help necessary to their employees and residents during the height of the epidemic in October 1918 and were willing to extend pleas to high government offices in order to do so.

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[252] Letter from Mr. J.A. Moore to the Honorable Claude Kitchin, October 17, 1918. Claude Kitchin Papers, #406, Folder 475.

[253] Letter from Major C.W. Ayers to the Honorable Claude Kitchin, October 19, 1918. Claude Kitchin Papers, #406, Folder 475.

All across the state, mill owners, mill workers, county boards of health, and relief programs worked together to fight influenza during the month of October and early November. During the second week of November, the industrial editor of the *Charlotte Observer* wrote that:

> When influenza broke out, it was the first bad attack of sickness that many of these communities had ever known, and mill officials and mill employes [*sic*] joined together to stamp it out. One or two villages have escaped entirely, but the big majority have had many cases, although it may be said that the death rate here [Alamance County] has been exceedingly low.[254]
>
> Where nurses could be obtained the mill managers immediately engaged some. Where nurses could not be gotten, the employes [*sic*] and mill executives took the work in hand and neighbor helped neighbor. Temporary hospitals were fitted up. Medicines and food were carried to the sick, and every comfort possible to give was offered. Systematic policies for checking the spread of the disease were put into effect. In most cases the mills closed down entirely. Premises were cleaned up. Everyone was urged to stay away from crowds and to keep strong by eating wholesome food and staying in the fresh air.
>
> And so, at length, the end of this fearful epidemic is in sight. Very few cases are existent in these communities today, and the small death rate and the quick triumph over the disease are the result of the prompt manner in which mill officers and mill workers joined together in a common fight.
>
> The same is true in practically all the mill communities of the state. Many villages have been extremely hard hit, but thanks to the quick action of the mills in inaugurating their fight against its spread, the Spanish influenza is today almost a thing of the past.
>
> Many thousands of dollars have been spent by mill corporations in waging this fight, and what is more, mill officials as well as mill employes [*sic*] generally have shown the true Christian spirit in their readiness to go into the homes of the afflicted and render needed service.
>
> It has been a terrible scourge, but the worst is past at last.[255]

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[254] This statement is not entirely true. Alamance County experienced moderate influenza mortality rates in October 1918)730.23 per 100,000) compared to other North Carolina counties and elevated influenza mortality rates in March 1919 (105.71 per 100,000). Author's calculation of age-sex-race adjusted county mortality rates accessed from www.ancestry.com and the 1920 United States Census. For more information, see Austin, "Falling Around Us," 2018.

[255] *The Charlotte Observer* (Charlotte, NC), November 10, 1918.

Just in time for Armistice Day, the mills and mill towns were seemingly free of pneumonia. At least, that was what was being reported. In reality, the influenza epidemic was still problematic; the North Carolina Board of Health reported 2,083 flu deaths across the state in November 1918.[256] However, the strong need of the public to return to a sense of normalcy and to provide the returning soldiers with a feeling of normality meant that subsequent outbreaks of influenza would not be dealt with in a similar manner as were those in October 1918.

During the later outbreaks of influenza in the early months of 1919, the local boards of health routinely closed schools, churches, and places of amusement for short periods of time, usually no more than a week, in order to try to suppress the current outbreak and then reopen the locations. These periodic resurgences of epidemic conditions can be viewed as "episodic closures." In most situations, the boards of health did not shutter business such as the mills but rather urged the citizens to make decisions that were best suited to the good of themselves as well as their community.[257] Consequently, mills and plants would occasionally decide to shut down for a short period of time if and when influenza became too prevalent among the workers, such as the closing of the Pitts and Giles Lumber Plant in Rutherfordton, NC during an especially virulent outbreak of influenza there in the third week of January 1919.[258] However, in most situations, after early to mid-November 1918, the majority of the county boards of health across the state opted to "not issue a closing order on account of the influenza situation" and "instead of closing up businesses and preventing trade," chose to "issue an

[256] Rankin, "Annual Report, 1919," 350.
[257] *Greensboro Daily News* (Greensboro, NC), January 1918; *Oxford Public Ledger* (Oxford, NC), January 17, 1919; *The Alamance Gleaner* (Graham, NC), January 23, 1919.
[258] *The Sun* (Rutherfordton, NC), January 23, 1919.

earnest appeal to physicians and citizens to co-operate" in reducing the spread of influenza.[259] In many instances, these board meetings were held in secret, with official communication regarding the board's decision issued afterwards.[260]

The mill owners, managers, and employees showed themselves to be more than willing to go above and beyond to take care of sick employees when the epidemic was at its height in October 1918. Nurses were hired, food kitchens were established, and the expectation that everyone would do their part to provide relief and care was prevalent. However, after the war ended and there was a push for things to return to normal, the mills appear to have dealt with subsequent outbreaks with less fervor and with a more pragmatic mindset. There was also the sentiment that the epidemic had already cost local businesses a lot of money due to closures, and businessmen and bankers grew anxious. Mr. O. J. Moore, the cashier of the Planters and Commercial Bank in Scotland Neck, NC wrote to a friend on October 30, 1918 that, "We have had quite a number of cases of influenza in town, but it looks as though the worst is over. The tobacco markets have been closed and there is an embargo on cotton shipments to Norfolk, which has blocked business and is making money tight. I understand that the markets will open up Monday and we hope to see normal conditions before a great while."[261]

As the mill towns continued to grow and advertise for more workers to relocate to their areas and seek employment in the mills after the end of the war brought about the end of the labor shortage, the epidemic was seemingly forgotten, even while it was ongoing. In the January 3, 1919 "Textile Progress Edition" of *The Charlotte Observer,*

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[259] *The Chatham Record* (Pittsboro, NC), January 30, 1919.
[260] Ibid.
[261] Letter from Mr. O.J. Moore to the Honorable Claude Kitchin, October 30, 1918. Claude Kitchin Papers, #406, Folder 476.

Mayworth, the location of Mays (Cramerton) Mills, was touted as "a hustling little mill city with every known convenience and comfort for operative of Mays Cotton Mills." The town also boasted that "the finest kind of health record has been made here, with no fever at all for years."[262] The same sentiment was again published on January 5 when *The Charlotte Observer* published an article on the start of the new year at Mays Mills. The "recent epidemic of influenza" was casually mentioned as the reason why the local school only received one week of Christmas break but much more attention was given to the idea that Mayworth "is recognized as the most healthful village around here" and that "everyone who moves to Mayworth gets a favorable impression of the place, but the thing that makes it the most favorable is the fact that the mill company takes care of the interests of its people." Such statements seem not only odd considering the influenza epidemic was still prevalent throughout the state and was still claiming thousands of lives each month but also seems like purposeful ignoring of the epidemic and its outcomes. Yet again, we see a change in reaction to outbreaks between October or early November and the remainder of the epidemic cycle.

THE RESPONSES OF NORTH CAROLINA'S CITIZENS

While the actions and responses of state and local officials as well as local businessmen are usually easily located in business records and newspaper archives, the private responses to the epidemic are much harder to locate. Yet it is private correspondence that provides truly enlightening information as to how individuals living in North Carolina during the fall, winter, and early spring of 1918-1919 really felt about

[262] *The Charlotte Observer* (Charlotte, NC), January 3, 1919.

the epidemic. Were they scared? Stoic? Did they seem to forget the epidemic as quickly behind closed doors as did officials and newspapers in public? Examining private correspondence and memoirs from the time will help shed light on these questions and determine if the majority of North Carolinians viewed the epidemic the same privately as they did publicly.

Undoubtedly the most famous personal reflection of the 1918 influenza epidemic is in Thomas Wolfe's autobiographical novel, *Look Homeward, Angel*, in which Wolfe describes the influenza death of the main character's brother, Ben, which is clearly based on his own brother Benjamin's death from influenza in Asheville, North Carolina (located in the Mountain Region) in October 1918. This passage is one of the few references to the epidemic in American literature,[263] and is therefore often cited. However, what is less well-known but far more interesting is the memoir of Wolfe's sister, Mabel, and her recollection of Benjamin's death from influenza. Perhaps the reason Mabel's account of her brother's death seems more personal is because she was with Benjamin throughout the length of his illness, nursed him, watched her family's reaction to the death about which Thomas wrote a decade later, her words simple and more direct. Her accounting is raw, conveying to the modern reader an authentic experience, in contrast to that of Thomas Wolfe, whose account was intentionally written to create a metaphorical connection with "the culmination of the living death quality" to further the novel's creative sense of mortality and loss.[264] In other words, Mabel's telling of Ben's death is pure, wrenching non-fiction. Concerning the death of Benjamin, Mabel's account is lengthy but presents many indications of how the epidemic was

[263] Outka, "Wood," 937.
[264] Ibid., 951.

perceived, how it was treated, and clues as to why so many individuals did not discuss the epidemic in subsequent years. In fact, Mabel's recollection of Ben's death is perhaps the most complete, comprehensive, personal account of influenza that exists. The sister of Thomas and Benjamin Wolfe reflects that:

> Tom had been back in Chapel Hill for only a few weeks at the beginning of his junior year when he was suddenly called home. That year, 1918, is remembered sadly by a great many persons as the tragic time of the horrible influenza in this country. In the great sprawling soldier-training camps that had sprung up over the nations, young men died by the thousands, and in homes everywhere that strange, deadly plague struck down countless victims.
>
> Ralph [her husband] and I had moved back to Asheville to live. Ben some time before had resigned from the Asheville *Citizen*'s circulation department to go to Winston-Salem, North Carolina, as circulation manager of the *Twin City Sentinel,* a responsible position for a young man hardly twenty-six. Late in September, about the time that Tim was packing to return to school, Ben had come home for his vacation. Now it was nearing the time for Ben to resume his work in Winston-Salem.
>
> The Sunday morning before he was planning to leave he seemed quite well. But that afternoon he went downtown and soon began to feel himself getting chilled. So he bought a bottle of castor oil, and some other things folks used to prescribe for colds and chills, and came on home. "You know," he said to us, "I believe I'm getting that thing, too."
>
> Cases of flu, as it was called, were appearing in our town, and people were beginning to talk about it and greatly fear it. It was so deadly. Often is struck down its victims without warning; it was a like a dagger to the heart.
>
> Ben went to bed and we called Dr. Purefoy. He came and gave Ben some medicine, and the boy was sick for a week or longer with a terrible cough. He was already frightfully thin; on volunteering for service in the war he had been turned down time after time because of physical disability. And now he was coughing and retching from that terrible cold. But he seemed to get a little better and Dr. Purefoy gave him permission to sit up.
>
> He was sitting up one day when I went over to the Old Kentucky Home to see him. He was wearing a bathrobe of that crash stuff like they use for bath towels; he sat by a table, with the windows up. I asked him if there was anything I could do for him

"You know, Mabel," he said with a wan smile, "I believe I could eat a bowl of that cream of tomato soup if you'd fix it for me."

I told Ben I would make him the soup. He thanked me, then he said, "Mabel, I believe I've got a temperature; but somehow I have been sort of chilly."

Quickly I felt his forehead and cheeks and realized that he was parched, scorching. One of us took his temperature and discovered it was nearly 104. So, of course, we put him back in bed and called the doctor, and once more, Dr. Purefoy came. When he arrived, Ben was coughing wretchedly.

"Ben, I told you that you could sit up," the doctor scolded him when he learned what Ben had been doing, "but didn't tell you to sit up all day."

Ben coughed all night, they reported in the morning when they telephoned me to ask me to return to Mama's. I went right away and found Ben very ill, sicker than any of realized at the time. Mrs. Trimm, one of Ben's friends who lived in the house, had been waiting on him throughout the night, because no trained nurse was available. And Mama was very busy with her boardinghouse duties; she still had a number of her summer boarders.

Mrs. Trimm asked me if I would go for our cousin-by-marriage Effie Wolfe, who was running a sanitarium in Asheville and was an excellent nurse; at one time she had been superintendent of the local hospital.

So Ralph and I rushed out to the sanitarium. Effie, we found, had been ill herself – she had a heart ailment – and was in no condition to come with us. But she did. We got her into our car, and when we reached Mama's, someone came out and helped carry her up to Ben's room, the little room on the second floor at the front, with a small outside sleeping porch.

Effie was upset at Ben's evident condition. He was coughing terribly and his thin, emaciated body was racked with every cough; he seemed unable to get any relief. She gave orders to have him moved, from his little room into the big bedroom beside it, and had a fire made in the grate. She told me to go downtown and tell Papa that Ben was gravely ill, and that his coughing must be stopped, and she instructed me to hurry back with antiphlogistine, castor oil, lemons, and perhaps some other things I don't recall.

"We've got to stop this coughing," she declared. "We've just got to."

Soon Ben's influenza had gone into pneumonia. He was desperately ill. Double pneumonia, the doctor said. We wired Tom at Chapel Hill to come home. Oxygen tanks were brought into his bedroom. For days I stayed on my feet; already I had been three days and nights without sleep. It has been impossible to get another nurse, and Effie was a sick woman. We were desperate. So I got Uncle Will

Westall, one of Asheville's richest and most prominent men, and one of my good friends, the wife of a judge, and we went out to Highlands Hospital, an institution for the treatment of mentally disturbed patients, and I asked Dr. Carroll, the superintendent, if he had a nurse whom he might let us have to look after Ben. I shall never forget how Dr. Carroll looked, or what he said:

"Mrs. Wheaton, we have seventy people here who are down with the same thing your brother has. My nurses, of course, are terribly overworked trying to look after all these patients, but if there is one who will volunteer her services to nurse your brother after working at a desperate pace all day long, then she certainly has my permission."

Not only one did, but three. Miss Buna Stevens of Campbell, Florida, came the first night. The second night Miss Alfern nursed him, on the third night Miss Stein came, and the fourth night Miss Stevens came again. We shall always be grateful for their timely, indispensable help. Even to this day that experience is a nightmare. I can close my eyes and it all comes back, starkly and tragically and yet with a tenderness and a quickening of devotion and love that the lengthening years are unable to dispel.

There was then in Asheville a noted lung specialist named Colby. Dr. Colby was particularly expert as a diagnostician. We called him in to see Ben; it was the last day of our brother's illness. I remember seeing the doctor talking with Effie; around eight-thirty that evening he returned.

I recall how hopeful I was when I saw him. I had been depending heavily upon Dr. Colby's being able to save Ben. I had the idea somehow that if they could just keep Ben living through the day and night he might be able to throw off the deadly stuff in his lungs.

"Isn't there something that will keep his heart going?" I had asked, and somebody had answered, "Digitalis." So I had thought – it was little more than a built-up hope, I suppose – that they would put digitalis into his veins and this would keep his heart going, keep him living, and then he would be able to rid himself of the accumulation in his lungs. The stuff was coming up, I knew that; the oxygen was bringing it up from the lungs.

A big fire was going in the grate in Ben's room when Dr. Colby came that night. The windows were open to provide Ben air, as the boy was already gasping for breath, and when we'd see him struggling we would put the oxygen mask over his face and work with him in an effort to help him breathe. All the while I noticed that our cousin, Effie, was running analgesic balm on him, on his head and neck, and I thought that the fumes of the balm were making the tears I saw welling in her eyes. But then a moment later I heard her say to Dr. Colby, "When this is over, I'm going into one of those back rooms here and sleep a week, I am so

tired."

The day before, she had said to me that if Ben got over this illness he would be a sick boy for months, that he would have to watch his lungs carefully, because there was a lung condition there that this illness had aggravated. She said he would be an invalid for a while, that he would have to go slowly in resuming his work. And now I wondered how she could be talking of sleeping soon, and sleeping for a whole week.

Suddenly it came to me, and I jumped to my feet. "Aren't you going to do anything for him!" I screamed. "Aren't you going to do anything for him!"

Dr. Colby looked at me calmly, stood up. "Mabel, there's not a man this side of heaven that can save him," he said evenly. "He's drowning in his own secretions."

I must have screamed out again. All I remember is that I was being pushed out of the room, for Ben was looking wildly at me. "Oh, Mabel," he managed to gasp out.

Then I was in the room where the others were. Tom and Fred were talking together, and Mama and Papa. Mama was lying on the bed, her spirit gone. I told them what Dr. Colby had said, that Ben could not live, that there was no hope at all.

I did not go back into Ben's room. I could not go. I am very good at nursing those I care for – up to a point; but I cannot be composed at a deathbed.

Ben died at four o-clock that Saturday morning. It was October 19, 1918.

That afternoon the Asheville *Times* under a three-line head carried the story of his death, and the next morning, the *Citizen*, where he had worked so long and with such devotion, gave additional details.

'Benjamin Harrison Wolfe, 26 years of age, an Asheville boy who made good in North Carolina newspaper circles, died yesterday morning at 4 o'clock in the home of his parents, Mr. and Mrs. W.O. Wolfe,' the story began, and it went on to report that the funeral would be conducted that afternoon with representative of the business department of the *Citizen* serving as pallbearers, 'Only open air services at the grave will be conducted in compliance with the regulations of the health department.'

The account continued with a long tribute, characteristic of newspaper writing of that period that 'His illness was borne with a patience that was characteristic of

> him and with a grim determination to overcome his affliction that rendered his failure to conquer the malady all the more tragic.'[265]

Mabel concludes her lengthy recounting of her brother's death by stating that, "Ben's death was a shattering blow to our family. None of us would ever completely recover from it."[266] She admits that Ben was had always been quiet and dignified but with poor health that was exacerbated by working long hours, day and night, on newspapers. However, Mabel notes that his death was still unexpected and rendered a hole in their family that they could not overcome and did not like to discuss afterwards.[267] Her account of Ben's death shows how much people in North Carolina began to fear the swiftness and deadliness of the epidemic, how they tried many medicines to cure their loved ones, and exhausted all other resources available to them to help the sick even while holding onto hope that life would be preserved. The Wolfe family was fortunate that they were moderately well-off and had the friendship of many prominent Asheville citizens to help them secure additional assistance; many other North Carolinians did not even have access to a telephone to call for a doctor if a loved one became ill. However, despite the Wolfe family's most heroic measures, Ben still succumbed to the epidemic. This outcome highlights the fact that there were no specific effective treatments available for influenza in 1918-1919, meaning that those who had access to medical care would likely fare no better than those who did.[268] There truly was no cure for this "strange, deadly plague."[269]

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[265] Mabel Wolfe Wheaton with LeGette Blythe, *Thomas Wolfe and His Family* (Garden City, New York: Doubleday & Company Inc, 1961), pp. 170-176.
[266] Ibid., 176.
[267] Ibid., 176-177.
[268] Dr. L.G. Walker, Jr., personal communication, January 26, 2018.
[269] Wheaton, *Thomas Wolfe*, 170.

The Wolfe family were obviously not the only ones to fear the epidemic or experience loss. Other North Carolina families wrote to each other, imploring their loved ones to remain safe during the epidemic, encouraging each other to take all measures to prevent the illness, and to keep abreast of how the epidemic was affecting their communities. One letter written from Wilmington at the height of the epidemic said, "We have indeed fallen upon evil days for added to the strain of war, comes its consort pestilence, striking down the loved ones at home and those abroad. Dr. Wood tells me this morning that this influenza pneumonia, is as deadly as the yellow fever. We are losing personal friends very day – the last victim being young Victor Grainger greatly beloved."[270] This letter demonstrates obvious fear of the epidemic as well as the pneumonia so often brought with it and provides evidence of the prevalence of death among young people during the fall strain.

On October 23, 1918, mathematics and engineering professor William Cain of the University of North Carolina at Chapel Hill wrote to his sister Bessie Henderson in Salisbury, North Carolina:

> I want you to write me how you are all getting on as to the Influenza. I was fearful for B Jr for both Drs MacNider and Mauquess wore masks & took <u>every</u> precaution and both have had it.
>
> Graham is down now – one lung affected. I believe like you that mother had this 'Flu' though it is strange that no one caught it from her.
>
> At our Table of 8, 4 have had it, including me, for I was aching all over & with head aches for 3 days – Took calomel[271] two nights & it relieved me – Am very

[270] Author and recipient not noted. Sarah McCulloch Lemmon, *North Carolina's Role in the First World War* (Raleigh: North Carolina Department of Cultural Resources, Division of Archives and History, 1975), 36.

[271] Calomel, or mercurous chloride, was a popular medicine given at the time of the epidemic. Calomel acts as a purgative and doctors treating influenza thought that quick and repeated elimination of the body helped cure influenza faster. Many physicians told patients to take doses of calomel during the epidemic, but no positive outcomes of this medication were recorded. In fact, toxic effects such as excessive salivation, gum inflammation, loosening of the teeth, gastrointestinal upset, an ashen appearance, and the development of

> well now.
>
> Barbara is still in bed with it & the children are not well of it yet – They were so fortunate as to get a trained nurse from the start.
>
> Of our boys, 3 have died & only 40 in Infirmary now; so that we have it in hand now – Once more the classes are full, but we have had to start books over again for at least one-half the classes were absent two to three weeks.
>
> Don't do any of your travel now on <u>any</u> ordinary account.[272]

On November 3, 1918, Professor Cain again wrote to his sister to implore her to remain vigilant about the health of her and her family, as well as to discuss the death of the University's president, Edward Kidder Graham, aged 42, from influenza on October 26, 1918:

> I can only infer from your letter that none of you has caught "the Flu," though I wrote you to tell me definitely, for B Jr has been in great danger. I do not like her exposing herself continuously. As I write you, Drs. MacNider and Mauquess both caught it in spite of masks on, Mauquess having a relapse of 10 days from going out when he thought he was well.
>
> Graham worked on 4 or 5 days after he contracted it or he might possibly be living today, though I doubt it as he had no strength & nervous system was always his weak point.
>
> If any of you get symptoms, don't do as I did (work on), but go to bed and stay there. I did lie down for four hours every evening and took no walks – this precaution with calomel two nights probably saved me. The other three cases at our house were laid up two days each.
>
> Poor Graham, as you say, it was very sad, particularly as he had reached his greatest state of usefulness to state and nation. The faculty have felt bewildered

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neurological symptoms are noticed in individuals given large doses of calomel for extended periods. For more information see Larry E. Davis, "Unregulated Potions Still Cause Mercury Poisoning," *Western Journal of Medicine* 173:1 (July 2000), 19. By the time of the epidemic, companies such as Dodson's Liver Tonic were warning customers against calomel, highlighting its disastrous effects on livers and its tendency to make patients salivate heavily. For more information see Dodson's advertisements such as that seen on page 3 of the *Forest City Courier* (Forest City, NC), August 12, 1920. Society began to move away from the mercury-based calomel around 1918-1920, but many people, such as William Cain, continued to take it during the epidemic because they were familiar with it.

[272] Letter from William Cain to Elizabeth Henderson, October 23, 1918, John Henderson Papers, #00327, Folder 349, Southern Historical Collection, The Wilson Library, University of North Carolina at Chapel Hill.

since his death and have not even discussed his successor.

Barbara is slowly improving. The children are well.[273]

A final letter from William Cain to his sister Bessie highlights one of the more interesting facets of the deadly fall strain of the 1918 epidemic. On November 4, 1918, William wrote to Bessie, "The cake came and I must [add] a line (to my previous letter) to mother of congratulations on attaining her 90 birthday – she is wonderful as bright as ever – not even the Flu can down her – I wish her and all of you and happy returns of the day."[274] This letter, as well as his letter on October 23, remarks on the fact that William and Bessie's mother had been sick with influenza at the age of eighty-nine but had recovered in time to celebrate her birthday in early November. This was one of the most peculiar characteristics of the flu strain that circulated in the fall of 1918: the elderly aged sixty and older were the age group *least* likely to die from influenza, possibly from a type of immunity gained from living through a previous epidemic in 1889 or perhaps even the less deadly 1918 spring strain, while infants and those aged 20-39 were the ones most likely to die.[275]

Also on November 4, 1918, Bessie's daughter-in-law Barbara wrote to her, describing her experience with being sick from influenza:

> I have been wanting to write and thank you all for your letters…. but I'm only able to sit up a few minutes at a time and have been unable to wield a pen.
>
> I am thankful to say the children are all well again and I am beginning to feel a little stronger – one of the hardest things is to know that to try and make yourself stronger does more harm than good.

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[273] Letter from William Cain to Elizabeth Henderson, November 3, 1918, John Henderson Papers, #00327, Folder 349.
[274] Letter from William Cain to Elizabeth Henderson, November 4, 1918, John Henderson Papers, #00327, Folder 349.
[275] Author's calculations from death certificates accessed from www.ancestry.com. For more information, see Austin, "Falling Around Us," 2018.

> The utter exhaustion that follows even a mild case of this influenza seems to have overwhelmed me entirely. It is so frightfully depressing to have so much to do and to be unable to do anything and one can't throw off mental depression when one is so weak.[276]

The fear of the epidemic was pervasive in October 1918, with many citizens afraid to travel and fearful of just how bad the situation would become. Mr. W.A. Finch of Wilson, NC (located in the Coastal Plain Region) wrote to a friend in Washington D.C. the following in response to an invitation to visit:

> I appreciate very much yours & Mrs. Kitchin's invitation for my wife and I to spend a week with you in the near future. I had delayed answering a few days, thinking we could probably get away for a few days & pay you a visit, but we were not able just then. Now it looks like it will be impossible on account of the influenza epidemic which I notice is serious in Washington and is becoming alarming here. Fortunately for us, we have not yet had to contend with it in our little family, but nearly every house here has one or more cases & several have died. Three of our doctors here are down with it and our good friend Dr. Harrison of Elm City died Sunday. He was a patient of Dr. E.G. Moon. All of your friends were very uneasy about you, Sunday & Monday, owing to the report in the Greensboro paper that you had a decided turn for the worse Sunday night and that you were seriously ill. I wired Seth Monday about you, but have heard nothing from him but are glad to see the good news this morning that you are about well. You must take care of yourself.[277]

The death of Dr. Harrison was further recounted by a mutual friend, Mrs. Ewin Moore of Elm City, NC in a letter dated October 15, 1918 to Mr. Kitchin in Washington:

> Dr. Moore has intended writing you every day, but this dreadful epidemic has him going by day & night & Dr. Harrison left us a week ago, his associate & partner in medical work for twelve years & he is heart-broken, don't think Dr. Moore had ever connotated death with Dr. Harrison – he was so active & so much younger than Dr. Moore – so many of our doctors are being taken. We are delighted to know that you are better, we watched the papers daily & have been so anxious for

[276] Letter from Barbara Henderson to Elizabeth Henderson, November 4, 1918, John Henderson Papers, #00327, Folder 349.
[277] Letter from W.A. Finch to the Honorable Claude Kitchin, October 8, 1918, Claude Kitchin Papers, #405, Folder 475.

> you were so over-worked before this disease seized you. Try to avoid taking cold. Pneumonia set in & Dr. Harrison slipped away so quickly.[278]

This letter highlights the fact that not only were North Carolinians aware that the pneumonia that followed influenza was deadlier than the flu itself, but also again provides evidence for the fact that this particular strain targeted the young and healthy, such as the forty-one-year-old Dr. Harrison of Elm City, NC.[279] It also points to the fact that medical professionals were especially vulnerable during the epidemic.

North Carolinians living outside of the state during the epidemic were often anxious to hear news from those back home, having to rely on correspondence from friends and loved ones for information. Living away in Washington, D.C., North Carolina Congressional Representative Claude Kitchin relied on letters from home to know how the influenza situation progressed there. Kitchin himself had been sick with "La Grippe," later known as Spanish influenza in late September 1918 while at home in Scotland Neck, NC[280] and, aware of the severity of the illness, kept watch on how the epidemic affected his constituents. On October 20, 1918 his brother Paul, an attorney living in the family's home of Scotland Neck wrote to Claude, "The Influenza epidemic is the worst thing ever struck this country. Our people are frightened almost to death. I am I know. Leland and Thurman have it, but both are better now. Raymond Dunn is still improving. We have about sixty cases in town. With best wishes, I am, your bro."[281]

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[278] Letter from Mrs. Edwin Moore to the Honorable Claude Kitchin, October 8, 1918, Claude Kitchin Papers, #405, Folder 475.
[279] Medical Society of Virginia, "Obituary Record," *Virginia Medical Monthly* 45 (1918): 200.
[280] Letter from Charles H. England to Dr. R.T. Vann, September 31, 1918, Claude Kitchin Papers, #405, Folder 474.
[281] Letter from A. Paul Kitchin to the Honorable Claude Kitchin, October 20, 1918, Claude Kitchin Papers, #405, Folder 474.

Similarly, a letter to Kitchin dated the next day from friend and attorney Luther M. Carlton of Roxboro, NC noted that, "Roxboro and Person County has been hit hard, and everything is still closed up here. We have probably had fifty deaths in the entire County and still some are very sick. When ever [*sic*] I can do anything down this way, let me know."[282] On October 23, 1918, Dr. Cliff Whitehead of Halifax County, NC wrote to Mr. Kitchin, "To my mind it is the worse thing that has struck us in a long time, We have certainly had some of it down this way and a lot of good people passed out, I have had four little boys in bed for several days. I saw several people from Scotland Neck today they have had several deaths over there."[283] From these letters it is evident that many people in North Carolina were fearful of the epidemic, alarmed at its rapid progression, and aware of its increasing mortality throughout the month of October.

However, North Carolinians did not have to live outside of their home state in order to feel anxious for news from home. At a time when news traveled more slowly, simply living in a different part of the state from family and friends meant that individuals often felt isolated and in the dark regarding the fate of loved ones during the epidemic. In late October 1918, Jane "Jennie" Crichton Williams of Jackson, NC in Northampton County (located in the Coastal Plain Region) wrote to her mother Lucy Tunstall Alston in Warrenton, NC a series of letters that encapsulates the fear that so many North Carolinians felt during the height of the epidemic in late September and October 1918. In late September, Jennie wrote to her mother, "I'm so glad to hear that Nettie is better and that none of the rest of you are sick, it seems to be one of the worst

[282] Letter from Luther M. Carlton to Charles H. England, October 21, 1918, Claude Kitchin Papers, #405, Folder 474.
[283] Letter from Dr. Cliff Whitehead to the Honorable Claude Kitchin, October 23, 1918, Claude Kitchin Papers, #405, Folder 474.

things I've ever known, we haven't so very many cases in town but its scattered all over the Co. and Dr. Lewis says it's spreading rapidly. We have not felt the slightest symptoms of it, but can tell you we don't go out much. Wilkins [her husband] sprays regularly I haven't yet but suppose I ought to."[284] This letter shows that Jennie was fearful that the epidemic was spreading outwards from the coast of North Carolina, as well as indicates also that citizens were already taking preventative measures to prevent getting sick, such as staying indoors (prior to the formal suggestion of Governor Bickett and the State Board of Health on October 3, 1918) and engaging in the use of preventative nasal-pharyngeal sprays.[285] Before the middle of October, Jennie writes her mother that:

> My dearest Mama,
>
> Lo thinks you've had the Influenza and Lucy too, it's really more than I can take in, I'm so glad tho to know that you are better but mercy! please be careful I'm so dreadfully afraid of it and you know the biggest danger comes when people think they are well and then do little things they should not. Dr. Boone was up and they thought about well and now he's back in bed with another spell. It's all perfectly awful. We have most certainly been fortunate, Wilkins feels that we will have it yet some how but I don't think so any way I'm doing every thing to keep away from it – we have no new cases about here and I hope it will all soon be gone.
>
> I'm terribly sorry about Uncle Ed and his folks, it seems to be fatal to women in her condition. But I must not talk about sick folks any more.
> Please be careful and don't get sick.[286]

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[284] Letter from Jane Crichton Williams to Lucy Tunstall Alston, September 1918, Lucy Tunstall Alston Williams Papers, #04351, Folder 13, Southern Historical Collection, The Wilson Library, University of North Carolina at Chapel Hill.

[285] Many companies marketed products as being antiseptic safeguards against influenza. Examples include the "Milton" spray manufactured by the Milton Manufacturing Co. and the "Branston Violet Ray Ozone Generator" manufactured by The Charles A. Branston Co. Even United States Military medical officers sprayed the mouths and throats of healthy men daily with a solution of dichloramine-T as a preventative measure. Carol R. Byerly. "The U.S. Military and the Influenza Pandemic of 1918-1919." *Public Health Reports* 125:Suppl 3 (2010): 82-91.

[286] Letter from Jane Crichton Williams to Lucy Tunstall Alston, October 1918, Lucy Tunstall Alston Williams Papers, #04351, Folder 13.

Jennie's letter at this point makes several interesting points. One is that it acknowledges the recurring nature of the epidemic, with those who got out of bed and attempted to resume normal activity often falling victim to another bout with the disease, as in a small way did Benjamin Wolfe. Second, it makes note of the fact that the flu seemed to be especially fatal to pregnant women. While no statistics exist to support this hypothesis, examination of death certificates from the period of the epidemic does show that many of the flu victims were pregnant females. It seems as though in many cases, the influenza caused women to go into premature labor, causing the death of both the woman and child.[287] Third, this letter shows that by no later than mid-October, some people in North Carolina were growing weary of talking about the flu, discussing death, or dwelling on their losses, instead hoping that the epidemic was on the decline instead of continuing to spread.

In late October 1918, Jennie once again wrote to her mother, again showing that the situation remained dire, but that individuals were trying to balance fear with a desire to return to life before the epidemic:

> My dearest Mama,
>
> I've been so bothered about you I can't feel that you are all right, this Influenza is such a fearful thing I am more afraid of it than anything I know of. The awful news I hear about it every day I think is one thing keeps me feeling so badly – poor Minnie Burgwyn is at the point of death tonight, with a tiny little boy not a month old, Dr. MacDaniel's wife (he's a special friend of Wilkins and Dr. Lewis) is just as a sick as she can be and there are even so many cases and a number of deaths still the situation is improving – so much for the 'flu' – cept I'm still staying at home haven't been any where yet. I think Dr. L and W are making me being [*sic*] unnecessarily careful but I'm going to do what they say –[288]

[287] Author's observation from death certificates accessed from www.ancestry.com. For more information, see Austin, "Falling Around Us," 2018.
[288] Letter from Jane Crichton Williams to Lucy Tunstall Alston, October 1918, Lucy Tunstall Alston Williams Papers, #04351, Folder 13.

Jennie seems to bounce back and forth between being extremely fearful of the epidemic as "a fearful thing" that she is "more afraid of than anything" else and the belief that the flu situation was improving and that to take continued precautions at this point was considered being "unnecessarily careful." It seems strange that someone could be so frightened of a disease but still consider precautions against catching it to be "unnecessary,"[289] but this sentiment portrays the changing view of the epidemic across the state as October faded, the end of the war grew likely, the holiday season loomed closer, and everyone desired a return to normality.

In her last letter to her mother that addresses influenza, Jennie writes in early November:

> My Dear Mama,
>
> After getting your letter Tuesday I was rather upset as I hadn't seen a Record since the first of Oct. and I had no idea who was dead but Wilkins got a copy of that valuable paper from the Progress Office today and I have found out, then too Mamie's 'news sheet' came tonight am terribly distressed over it but I feel a little better satisfied. I had imagine [*sic*] any number of the people at home dead, this Influenza is the worst thing I've ever heard of, Jackson itself has been so far exceedingly fortunate, no death among the white people (two negroes) and only one pneumonia case and that was Dr. Boone (Camilla's husband) he is better but still quite sick, the county is full, and poor Dr. Lewis is on the go all the time, there are only about five Drs now in the whole Co. – the others either sick or dead, so Dr. Lewis as were the others, has at best twice his usual practice – but I tap on wood when I say he hasn't lost a patient with it yet. We are real well, and you can imagine how close we stay at home and how we spray and gargle. I haven't been as far as the post office in about two weeks – Pagu, Mama Sally the Colourds [*sic*] and I visit but that is all. I'm almost afraid for Wilkins to come home for fear he will say some one else has it or is dead. Of course every thing is closed up except stores and not over ten people are allowed in a store at a time. But I'll not write any more, although I've certainly got the 'flu' on the brain.[290]

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[289] Ibid.

[290] Letter from Jane Crichton Williams to Lucy Tunstall Alston, November 1918, Lucy Tunstall Alston Williams Papers, #04351, Folder 13.

This letter is interesting because it discusses the ongoing business restrictions in place because of the epidemic, with no more than ten people allowed in a store at any one time, and also shows that in early November, people were still fearful of influenza. Jennie still called the flu "the worst thing I've ever heard of" at this point with many doctors sick or dead and so many others deceased or ill with it that she remained "afraid" and "distressed,"[291] so it is worthy of note that after the end of the war, her letters no longer address the epidemic at all.

North Carolina families also wrote letters to their loved ones serving in Europe to keep them apprised of the epidemic situation at home. The letters of Mrs. Jane "Etta" Peeler of Hickory, NC (located in the Piedmont Region) to her son, Corporal Lawrence T. Peeler of Company H, 199 Infantry, American Expeditionary Force, stationed in Europe, also provide a glimpse into how private citizens viewed both the epidemic and the resulting policies put into place to stop its spread. On October 20, 1918 Mrs. Peeler wrote to Lawrence:

> My Dear Boy,
>
> We received yours of Sept 26, 1918 yesterday, so glad you are well and enjoying your self. Lee and I have been sick with Influenza and I wanted to get well before writing you so we would not give you any germs. There are a thousand or more cases in Hickory and there has been a number of deaths. The churches, schools, and all public gathering places have been closed over a week and still the disease rages. What is true here is true almost all over the State, the situation is very serious, the Drs are rushed and then can't any thing like get around. I will send you a bunch of Records and you can see the situation better than I can write it. The Annual Conf. meets two weeks from Tuesday, some think it will be postponed indefinitely if the situation doesn't improve. You see the preachers are not allowed to hold service and therefore the collections will be behind. It is

[291] Ibid.

> raining today a very gloomy disagreeable Sabbath, I expect it will be hard on the sick.[292]

Mrs. Peeler's letter contains the notion that perhaps germs could be transferred between individuals via letters or the saliva used to close the letters, and she explains that as her reason for not writing her son for a period of time. She also references the widespread closures of schools, churches, and other gathering places, with special attention given to the fact that with no church services allowed, the community collections will be lacking. However, she also makes note of the fact that the closures do not seem to be halting the spread of influenza. Lawrence's brother Lee also wrote to him on October 20 that:

> We received your letter and were glad to know that you were well. We have just got over the influenza. There is about one thousand cases in Hickory now. Our school has been stopped two weeks now and I have been working about a week.
>
> I went to Boone two weeks ago last Friday to play basket ball and then Saturday night I took the influenza and mama took it a couple of days after I did.
>
> One day while we were sick Uncle Jim come up in his Ford to see us while he was returning home from Rutherford College but they did not get any farther than the road.[293]

Lee's letter demonstrates the necessity of the quarantines during an epidemic. On or about October 4, Lee traveled from Hickory, NC to Boone, NC (located in the Mountain Region), a distance of some forty-five miles, and the next day began showing symptoms of influenza. This means that he was sick and contagious when he traveled to Boone and almost certainly unwittingly spread the disease whilst there. His letter also shows just

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[292] Letter from Mrs. Jane Peeler to Corporal Lawrence T. Peeler, October 20, 1918, Elsie H. Booker Collection, #04580, Folder 103, Southern Historical Collection, The Wilson Library, University of North Carolina at Chapel Hill.

[293] Letter from Lee Peeler to Corporal Lawrence T. Peeler, October 20, 1918, Elsie H. Booker Collection, #04580, Folder 103.

how wary family members were of the epidemic; Uncle Jim and his family declined to approach the house, much less come in to provide help to the sick.

A week later, Mrs. Peeler again wrote to Lawrence that the churches remained closed:

> My Dear Son,
>
> We are staying at home today, the churches are closed on account of the Influenza Epidemic in town, we are all well again and feeling about as usual. I hope it will soon be so the churches and schools can open once more. Conf was to have been in Monroe on the fifth of Nov but they wired that on account of the Epidemic they could not entertain it, so the date has been postponed indefinitely but it will meet in Charlotte as soon as conditions permit.
>
> Your Mother[294]

Mrs. Peeler's letter on this date convey a sense of the family's health returning to normal, along with a hope that the community would be able to also return to normal soon. Unfortunately, Lawrence did not receive any of these letters from his mother or brother; he was killed in battle on September 29, 1918, before any of these letters were even written and they were subsequently returned to Mrs. Peeler after her son's death.[295]

Letters from North Carolinians to their friends during the epidemic can also illuminate the atmosphere and attitudes of individuals living in different parts of the state. On October 16, 1918, Harry W. Stubbs, an attorney living in Williamston, NC, wrote to a friend that, "We are in the throes of the most terrible Epidemic that has ever visited our section. People are falling around us 'as thick as leaves in Vallombrosa.' All business is suspended, and everyday seems like Sunday. Not a country-man is seen in Town, and

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[294] Letter from Mrs. Jane Peeler to Corporal Lawrence T. Peeler, October 27, 1918, Elsie H. Booker Collection, #04580, Folder 103.
[295] The Else H. Booker Collection Overview, http://finding-aids.lib.unc.edu/04580/

every place quarantined. There seems to be some little abatement of the Epidemic, and we hope for normal times in the very near future."[296] This reference to Vallombrosa harkens the reader back to the time of Milton's *Paradise Lost,* in which he wrote, "Thick as autumnal leaves that strew the brooks in Vallombrosa, where the Etrurian shades high overarched embower."[297] Vallombrosa is a Benedictine Abbey located in Tuscany, where Milton was supposed to have visited and perhaps stayed. The use of this imagery to describe those dying of the flu brings to mind dead autumn leaves littering the ground, forgotten where they lie, a victim of the season and their circumstance. The choice of this metaphor is interesting, as the victims of the flu were also victims of the season and their circumstance and seemingly in many cases, publicly if not privately, also forgotten where they lay.

On October 19, 1918, Harry W. Stubbs wrote again to his friend that, "Everything is at a standstill here, nothing doing and deaths occuring [*sic*] almost daily. There is no chance to do anything at present, and I don't know when the terrible scourge will abate."[298] Oddly, no more letters from Harry Stubbs mention the epidemic. After October, like so many others, he fails to mention the disease which caused him to wax so philosophically fearfully just a few weeks prior.

The Josie Neal papers located at the Rubenstein Library provide a glimpse of the epidemic experience in and around the Greensboro, Raleigh, and Durham, NC areas in

[296] Letter from Harry W. Stubbs to Colonel Bennehan Cameron, October 16, 1918, Bennehan Cameron Papers, #03623, Folder 606.
[297] John Milton, *Paradise Lost* (London, Penguin Group, 2000), Book 1, line 302-304.
[298] Letter from Harry W. Stubbs to Colonel Bennehan Cameron, October 19, 1918, Bennehan Cameron Papers, #03623, Folder 606.

the fall of 1918. On October 13, 1918, Josie Hackney of Greensboro wrote to Josie Neal of Durham:

> Dear Josie,
>
> I will answer your letter after so long a time. You must excuse me for not writing sooner. The reason I did not write to you was because I had the influenza. I have just got so I can get a bout now. There is not but six of us got it all except Mamma and Papa. Have any of you all got the Spanish Influenza yet? Dink and Headon and the baby has it. What are you doing for fun these day's we are not doing any thing here all the shows have close and stores closes at 4 oclock and they wont let them sell cold drinks. So Greensboro is a very dull place now. Josie I have got you a good looking feller he has a big piedmont car. He came to see us and all of us were in bed.
>
> The doctor has just left so I will finish my letter. You know I got out of bed Wednesday and sit up all day and the next day I like to have died. I sure so hope you all will not get the influenza. Well news is scarce so I will close hoping to hear from you soon with a long letter.[299]

Ms. Hackney seems more put out that there is no source of entertainment in Greensboro due to the quarantine measures put into place than she is about having influenza along with the majority of her family members, although she does note that getting out of bed before she was fully well caused her to experience a relapse, which mirrors previous accounts of the epidemic. It is interesting to note that although Ms. Hackney feels that the quarantines have caused the city to become boring, she does not state that they are unnecessary or ineffective. This suggests that in the middle of October 1918, individuals recognized the need for public health intervention to help stop the spread of the epidemic, but they were beginning to resent the negative impacts that such measures had on their lives.

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[299] Letter from Josie Hackney to Josie Neal, October 13, 1918, The Josie Neal Papers, Box 1, Folder 1, David M. Rubenstein Rare Book & Manuscript Library, Duke University.

On November 7, 1918, Josie Hackney wrote to another friend named Leonie in Chatham, NC that she was only recently recovered from the flu and related other news of the epidemic:

> My dear Leonie,
>
> I will answer your letter after so long a time. I guess you thought I was not going to write to you. I have been sick with the Flue. There were six of us in Bed at one time so we have a time – guess you heard about Dink's baby being dead she died with the Flue and phneumonia [*sic*] it was the only child Dink and Headon had. There sure is lots of people here died with the Flue. I don't guess you all have had it yet. I sure do hope you all will not have it.
>
> How are all the people at Chatham I don't guess the Flue got down that far. Well news is a scarce so I will close for this time hoping to hear from you soon.[300]

Contrary to her first letter, Ms. Hackney seems more aware here of the dangerous nature of the epidemic, with no remarks regarding the loss of entertainment venues although the quarantines were still in place at that time.

On November 10, one of Josie Neal's suitors, Mr. C.J. Morris, wrote her a letter expressing concern that he had not heard back from her in response to his previous letter dated October 16. Mr. Morris recounts many influenza deaths to Josie, including those of mutual friends and acquaintances:

> Dearest little girl,
>
> Will write you this a.m. I haven't heard from you yet. Did you get the note I wrote while I was on my way home. I wrote it while I was at Raleigh waiting for the train but I think I put the wrong box no – I think I put 265.
>
> Papa telegraphed to me Monday to come home Ralph had the flue. I didn't get it till I got in from work at 6.30 I left on the 8 oclock train rode all night. Found Ralph in bed. He is getting on very well. Is sitting up some today.

[300] Letter from Josie Hackney to Leonie Neal, November 7, 1918, The Josie Neal Papers, Box 1, Folder 1.

> I sure was surprised when I got to Chapel Hill to find Miss Veron Herndon dead. I spent Sunday evening at her house when I started back to VA only 2 weeks before. We had a singing and I enjoyed myself very much. She was the very picture of health then, isn't it a sad thing to die so young? And she was such a good girl too. She had the flue.
>
> Jodie Riggsbee was buried Tuesday he had Influenza.
>
> Bennie is just getting over the flue.
>
> Josie I hope you have not had the flue. Wish I could see you its been such a long time since I saw you.[301]

With this letter, it is again evident that the influenza was quite often attacking those young and healthy. Mr. Morris expresses shock and sadness that someone as young and healthy as Miss Herndon could be stricken so quickly and dead within two weeks of seeing them last.

However, Mr. Morris's concern and angst about the epidemic was short-lived. In a November 24, 1918 letter to Josie Neal, he begs her to visit him soon in Petersburg, Virginia: "My Dear Sweet heart, now answer this just as soon as you get it and say you will come. I am already planning what a good time we are going to have. I hope there will be no contagious disease raging so we can have some parties."[302] No further letters from Mr. Morris contain reference to the epidemic; they only discuss parties and plans he has for himself and his sweetheart. In fact, the only reference to the epidemic in any letters in the collection after November 1918 was written on January 25, 1919 when Carlettis Guntis of Apex, NC wrote to Josie to inquire of her: "I hope you are all well & enjoying Health fine. What are you doing for fun this [*sic*] days. I wood [*sic*] be glad to see you all how is the Flus [*sic*] up thire [*sic*] have they stoped [*sic*] the school up thire

[301] Letter from C.J. Morris to Josie Neal, November 7, 1918, The Josie Neal Papers, Box 1, Folder 1. Home for Mr. Morris was probably Petersburg, Virginia, according to collection summary notes.
[302] Letter from C.J. Morris to Josie Neal, November 24, 1918, The Josie Neal Papers, Box 1, Folder 1.

[*sic*] they have closed the school down here & don't know whether it will start any more this year."[303] While this letter notes that there had been a resurgence of the epidemic in Apex bad enough to close the schools temporarily and perhaps for the remainder of the term, Ms. Guntis was much more interested to find out what Josie and her family were doing for "fun this days." In the same manner as other archival collections examined during the study period, there is barely any mention of the epidemic in correspondence after the end of the war on November 11, 1918.

This trend is also evident in the correspondence of the Caldwell and Davidson families of Charlotte. On October 6, 1918, Robert Baxter Caldwell of Rosedale Plantation in Charlotte, NC wrote to his niece-in-law Louise Heagy Davidson, who was visiting her family in Jacksonville, Florida:

> Dear Louise,
>
> The influenza is prevailing in Charlotte. A number have died. All the churches were closed yesterday. All the schools are suspended. The camp is quarantine [*sic*]. Large assembling of people are forbidden. Saturday the streets were deserted, Very few people in town. I will send you the Observer.
>
> Dr. Irwin says to keep the baby in Jacksonville two weeks. When get to town I will see Dr. Hudson, chief of the board, and send his opinion. Less children are all safe again.
>
> Yours truly,
>
> R.B. Caldwell
>
> (enclosed)
> Dear Louise,
>
> I have just seen Hudson & he says that influenza is as contagious as measles. He says to stay down there two weeks. He will tell you again what to do.

[303] Letter from Carlettis Guntis to Josie Neal, January 25, 1918, The Josie Neal Papers, Box 1, Folder 1.

> It is expected here that the disease will spread more in the next week.
>
> R.B. Caldwell
>
> I will write again tomorrow and send the Observer, will keep you posted.[304]

At this point, Robert seems concerned about the epidemic, aware that it was killing those in town and in nearby rural areas and was a danger because of its high level of contagiousness. However, in a letter sent the next day, Robert states that the epidemic was the same old "grippe" that circulates every year although closely followed by "dreaded" pneumonia. While acknowledging the closures of business and entertainment venues, Robert almost seems to downplay the epidemic as being not much more than is normally seen in a flu cycle:

> Dear Louise,
>
> I have nothing new to tell you this morning. This old Epizooty [*sic*] is the same old scounge we had years ago, then called "Grippe," if it is a little more unsparing. All moving picture houses have been closed. Mills Mooney was struck down by it while on duty. Louise was called back home to take care of him. The disease is not so deathly, the pneumonia that follows is to be dreaded. Don't bring the baby out too soon. Don't get in sneezing distance of any. The doctors here say give a purgative and a little quinine at first symptom. Send for the best doctor is better. I will write you every day. Did you get the trunk belt.
>
> Love to all.
>
> R.B.C.[305]

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[304] Letter from R.B. Caldwell to Louise Heagy, October 6, 1918, Caldwell Family Papers, Box 1, Folder 3, Special Collections, Manuscripts, University of North Carolina at Charlotte. The Dr. Hudson referred to is presumably Dr. C.C. Hudson, the first city public health officer who started work in Charlotte in October 1917. For more information see, Appalachian State University, "Public Health Nursing in Charlotte and Mecklenburg County Circa 1932," North Carolina Nursing History. https://nursinghistory.appstate.edu/public-health-nursing-charlotte-and-mecklenburg-county-circa-1932

[305] Letter from R.B. Caldwell to Louise Heagy, October 7, 1918, Caldwell Family Papers, Box 1, Folder 3.

The next day, October 8, Caldwell again wrote to Louise, remarking on the influenza situation in Charlotte and conveying the sense of fear that everyone within the city felt:

> Dear Louise,
>
> The influenza situation is about the same. I hear of deaths outside of Mecklenburg County. A sister of Skinner Allston died Saturday & his brother died yesterday. The people are badly frightened. It is the pneumonia that kills. When you walk up Tryon Street today, you soon notice the quiet when the movie picture is absent. The rail way coach is the most dangerous of all. Any kind of crowd seems to develop the sickness.
> The children of Less have all got well again. Leaves on the trees have turned brown and are rapidly falling off.
>
> Love to all,
>
> R.B.C.[306]

The next day, Robert wrote to Louise yet again to inform her that the churches had closed, a reference point used to impart the seriousness of the situation to her, and to implore her to not travel until the epidemic lessened.

> Dear Louise,
>
> The danger point has not passed yet. All of you are liable to have it. Therefore keep off the railroad and streetcar and large crowds of peoples. In Salisbury two people died on Saturday and on Sunday four people died.
>
> The doctors say for you to stay where you are until the disease subsides. Craig will write to you today. When all the churches are closed, you may know that the situation is serious. I will be glad to pay your share of house rent and board.
>
> Yours truly,
>
> R.B.C.[307]

However, despite the fear conveyed in the letters, no more letters exist between Robert Caldwell and Louise Heagy Davidson. Whether this is because the letters did not survive

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[306] Letter from R.B. Caldwell to Louise Heagy, October 8, 1918, Caldwell Family Papers, Box 1, Folder 3.
[307] Letter from R.B. Caldwell to Louise Heagy, October 9, 1918, Caldwell Family Papers, Box 1, Folder 3.

to be included in the collection or whether Louise defied the advice in the letters and traveled home to Charlotte, making further letters unnecessary, it is impossible to know. Regardless of the reason, it is interesting to note that after such fear towards the epidemic was conveyed so frequently and so adamantly in the letters between October 6 and October 9, there is an abrupt cessation of influenza references in this collection after that date.

A similar pattern can be seen in the correspondence of Private Joseph B. Mathews, stationed at Camp Greene in Charlotte, and assigned to work in the camp infirmary, to his girlfriend Eva La Flamme in Massachusetts. On September 29, 1918, he wrote to Eva, "About the Span. Inf. Officially we have none but in confidence I think there is about twenty cases in the Hos. That d--- pneumonia is the only thing on earth I am afraid of and I will admit I am scared to death of it. I'll just close with best regards and hope you all escape that influenza."[308] Private Mathews is referring to the official statement made by the camp on October 3 that there was as yet no influenza within the camp but that a quarantine was being issued to keep influenza from spreading from the city towards the camp.[309] According to his report, the camp already had influenza victims and what Joe had seen of these patients before September had even ended was enough to make him greatly fear the influenza and resulting pneumonia. On October 1 Joe remarked to Eva that the influenza had "showed its ugly head here but nothing alarming yet."[310]

However, only four days later, Joe wrote that the situation had greatly changed:

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[308] Letter from Private Joseph B. Mathews to Eva La Flamme, September 29, 1918, Joseph B. Mathews Papers, Box 1, Folder 2, Special Collections, Manuscripts, University of North Carolina at Charlotte.
[309] *The Charlotte News and Evening Chronicle* (Charlotte, NC), October 3, 1918.
[310] Letter from Private Joseph B. Mathews to Eva La Flamme, October 1, 1918, Joseph B. Mathews Papers, Box 1, Folder 2.

> Dear Eva,
>
> Things have moved so fast here this week that I don't know when I wrote to you last of if I told you we were quarantined. The old flue is raising Cain but not as much as at home [Massachusetts]. It sure was a wild old place the last few days. Here's how it hit me. Our service has had the eight wards of D now with mine as headquarters. When the flue patients started to come they decided to move all our service into the new convalescent wards but Capt Ross insisted on holding D6. So to do it he had to ship a bunch of gold-bricks, whites, no good, limited service yellow streaks supposed to be bed patients. It's a good thing the C.O. has not been in and seen me make them haul themselves around the ward and work. But I have flue wards on all sides of me. Even two of my patients got it. I asked the LT if there was any chance of germs traveling on stationary and he said no or else I would have stopped writing. But all in all there was several records broke in regards to numbers admitted and all kinds of work. New bed and cots and straw and medicine. Very industrious bunch. Most all wearing gauze masks. The old ambulances come up, steady stream 8 to 10 patients in each load. They have opened some of the old infirmaries at the camp and some of our non-comm went down to see them. We can't go to liberty park or out of camp. The Cad [publication] will lose about $400 today alone and I'll bet the merchants in town are feeling tight. Well it's all in the game anyway. I hope Jim will be able to get home today. Glad you are staying home a little, less chance of contracting flue when you are not in crowded areas. Am sending a card today.
>
> Well I guess I'll have to quit and take a few temperatures. The nurse don't come in for temps now and believe me Eva these new probationers are sure getting a baptism of fire. Working their heads off and most of the wards where nurses are in charge are all mixed up as to reports property and everything else. And all the old watchmasters are saying nothing and doing nothing but orderly work.
>
> Hope you steer clear and if you are afraid any germs will carry say so and I'll quit till it's over.
>
> Joe[311]

This letter conveys more of a sense of alarm on the part of Private Mathews, describing how busy the base hospital wards had become in such a short time, how overworked the hospital staff were, and how the camp was struggling to deal with the record number of patients. Another interesting point is that he asked Eva if she were scared of influenza

[311] Letter from Private Joseph B. Mathews to Eva La Flamme, October 5, 1918, Joseph B. Mathews Papers, Box 1, Folder 2.

germs affecting her from the mailing of letters back and forth and that he would cease writing for the duration of the epidemic if that was the case. At the beginning of the epidemic, people were still unsure of how exactly it spread and were willing to do whatever it took to keep their loved ones safe.

Joe did not have a chance to write to Eva again for five days. On October 10, he wrote:

> Dear Eva,
>
> Have 3 flue's, black. I had two whites ones but they came through and thanks to my LT who is a real M.D. These niggers will leave the ward on their own feet too. But, it must be awful back there in Mass. I was reading one of your papers the other day and saw about the funeral of the two brothers from City Point, good friends of mine, and also two old customers of the shop. There is just been an orderly in for D5 to tell the O.D. he has 3 more corpses in there. This is a great life, believe me.
>
> Well, goodbye, good luck, etc. Hope you all continue to stay clear of the flue.
>
> Joe[312]

It is evident through this letter that the flu was attacking both whites and blacks within the camp and that flu victims were accumulating faster than the morgue could process them. Joe was trying to juggle the influenza situation within Camp Greene while also processing the news of the deaths of loved ones back home in Massachusetts.

On October 13, 1918 Joe again wrote to Eva to update her on the state of the epidemic within the camp and how he was dealing with the disease:

> Dear Eva,
>
> 'They' have been trying to all forenoon to take D6 away from us and turn it into a flue ward but I think we are safe yet awhile. If they do I'd have to stay here to

[312] Letter from Private Joseph B. Mathews to Eva La Flamme, October 10, 1918, Joseph B. Mathews Papers, Box 1, Folder 2.

> care for the property that the chief is charged with and then a nurse would be in charge of the ward and that would not suit me a bit besides the undesirableness of handling flu patients. They are being shipped in a couple of hundred a day. Lots of niggers have sicked [*sic*]. Was at the morgue the other night and there was 17 niggers and 1 white man there. But the weather holds pretty good and that probably helps a lot.
>
> I hope Jim was able to get back and I hope they don't send him away for awhile. Lots of things will be happening in the next few months. I have a hunch that it will be over by Christmas. Am very glad you all are not afraid of germs traveling.
>
> No mass at the B.H. K of C [Base Hospital Knights of Columbus] now for two Sundays. I understand they have open air mass down in the camp but that's too far away on Sunday mornings.
>
> Believe me these little student nurses have their hands full. They got here just in time to catch it good and plenty.
>
> This old quarantine is getting monotonous. A little walk and the tent by 9 oclock and into bed and read until 9:45 or 10.
>
> Joe[313]

The interesting fact about this particular letter is that is demonstrates a turn in how Joe viewed the epidemic. The fervor of the past two weeks had calmed, and he was now bored with the quarantine and the resulting lack of places of entertainment to frequent in Charlotte and the limitations placed on gatherings. There is no indication that Joe feels that the quarantine is unnecessary or ineffective, but his remarks about it becoming "monotonous" after only a couple of weeks suggest that quarantines helped lead North Carolinians to feeling bored of and inured to the epidemic. He remarks that he has a "hunch that it will be over by Christmas" but it is unclear whether he is referring to the war or the epidemic. This ambiguity is important as it is a representation of the argument

[313] Letter from Private Joseph B. Mathews to Eva La Flamme, October 13, 1918, Joseph B. Mathews Papers, Box 1, Folder 2.

of Outka, Hume, Crosby that the influenza narrative became absorbed into that of World War I.[314]

The letter is also fascinating because it is the last reference to influenza made from Joe to Eva for two months, other than a casual mention on November 13, 1918 that the "old quarantine was lifted Monday as per the *Observer* and it was a big day."[315] But no other letter in the sixteen subsequent letters after that of October 13 mentions influenza at all. Instead, Joe's letters are full of details concerning minstrel shows on base, the Red Cross Halloween party, and trips that others on base had taken. It was not until December 14, 1918 that Joe wrote to Eva about influenza again. On that date he wrote, "There has been quite a lot of flu in town, we sent a few nurses to help in one of the hospitals the other day, but I don't believe it as virulent as before."[316] On December 22 he consoled Eva as she was apparently experiencing a resurgence in influenza cases in Massachusetts, "I am sorry that you all are having so much trouble up there with the flu, we are not hearing much of it now except in out of the way towns, very little here."[317] At this point in the epidemic cycle, Joe only mentioned influenza as an afterthought. He touched on the situation in his letters only after he'd talked about all other topics, which demonstrates how far the influenza had fallen in importance to him from those early hectic days of October.

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[314] *Crosby, Forgotten Pandemic*, 320; Hume, "The 'Forgotten,'" 898-915; Outka, "Wood," 944-946.
[315] Letter from Private Joseph B. Mathews to Eva La Flamme, November 13, 1918, Joseph B. Mathews Papers, Box 1, Folder 2.
[316] Letter from Private Joseph B. Mathews to Eva La Flamme, December 14, 1918, Joseph B. Mathews Papers, Box 1, Folder 2.
[317] Letter from Private Joseph B. Mathews to Eva La Flamme, December 22, 1918, Joseph B. Mathews Papers, Box 1, Folder 2.

By December 31, 1918, Joe had become ill. He wrote to Eva, "I thought it was flu but I got a look at my diagnosis which talks of bronchitis."[318] He felt better by January 7, 1919, writing to Eva, "I am feeling pretty good but I have a devil of a cough, no one can tell me that I have the flue, it's all a bronchial trouble."[319] Joe, having seen the horrors of the deadly influenza strain in person and quite often in the fall, was adamant that he had bronchitis and not influenza. He seems to have been correct, since no further mention of his illness was made in subsequent letters. The last reference in any of his letters to Eva of influenza came on January 19, 1919 when he remarked that, "I hope the flue don't last much longer anywhere, it sure has been an awful scourge."[320]

Out of the thirty-nine letters that Private Joe Mathews wrote to Eva La Flamme between September 29, 1918 and February 9, 1919 (when he was mustered out of Camp Greene ahead of its closure due to the end of the war), only nine of them reference the flu. The majority of the letters that referenced the epidemic were written prior to October 14, 1918. This is remarkable considering that the epidemic was ongoing throughout the duration of his correspondence from Camp Greene. Charlotte and the surrounding areas were experiencing surges of influenza throughout December, January, and February, some of which were bad enough to warrant the closing of schools and other public places, but Mathews barely makes a mention of this. Perhaps his reason for this can be traced back to his remark on October 13 that the quarantine, and therefore apparently the influenza also, was becoming monotonous. After peace was declared on November 11,

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[318] Letter from Private Joseph B. Mathews to Eva La Flamme, December 31, 1918, Joseph B. Mathews Papers, Box 1, Folder 2.
[319] Letter from Private Joseph B. Mathews to Eva La Flamme, January 7, 1919, Joseph B. Mathews Papers, Box 1, Folder 2.
[320] Letter from Private Joseph B. Mathews to Eva La Flamme, January 19, 1919, Joseph B. Mathews Papers, Box 1, Folder 2.

1918, the letters of Private Mathews mostly contained information regarding parties, soldier antics, dances, shows, adventures in town, and armistice celebrations. This mirrors the idea of a desire to return to normality, a need for the epidemic to end with the war, and a need to provide both returning soldiers and their family members a sense of consistency and normality after the end of the war.

Perhaps the turning feeling of North Carolinians towards the epidemic is best demonstrated by a letter written to Mr. Charles H. England, secretary to the Honorable Claude Kitchin, on October 26, 1918 by Mr. W.A. Finch, an attorney from Wilson, NC in Wilson County, located in the Coastal Plain Region. On that date, Mr. Finch wrote to Mr. England that:

> Your letter of October 2th, stating that Mr. MacRae Boyette has resigned as Cotton Gin Reporter, for Wilson County, has been received.
>
> I, also, was sorry to learn of the death of Seth High's wife, but we hear of so many deaths that we hardly take notice these days. As you say, Seth is one of the finest fellows I know and he would have made a much more useful man, if he had had the advantage of an education.[321]

The fact that Mr. Finch acknowledges that he and his family have been so inundated with reports of influenza deaths that by the third week of October they could hardly be expected to take notice of any more is eye-opening. It fully supports the idea put forth by both the editor of *The Daily Free Press* out of Kinston, NC and the Shylock character from the editorial allegory published in *The Health Bulletin* that after the tragic rush of flu deaths in October 1918 and the ending of the war in November 1918, the people of North Carolina largely became "inured" to the epidemic, that it was "commonplace and

[321] Letter from W.A. Finch to the Charles H. England, October 26, 1918, Claude Kitchin Papers, #405, Folder 475.

not much feared" anymore.[322] It is surprising that such a sentiment was vocalized as early as October 26 but perhaps this short span soundly demonstrates how quickly the average North Carolinian grew not only weary of the epidemic but seemed to incorporate the changes that it brought into their lifestyle. Yet as soon as the war ended, they wished to thrust those changes behind them and push forward in a cloud of celebratory normalcy.

Another example of how North Carolinians talked about the end of the epidemic erroneously occurring with the end of the war is contained in the memoirs of Samuel Morgan. Pastor Samuel Lewis Morgan wrote of his experiences during the October 1918 height of the epidemic in Henderson, North Carolina, located in the Piedmont Region. His account of the epidemic is noteworthy because it also dovetails the end of the war with the end of the epidemic:

> Even while the war raged at its worst, another enemy attacked our nation with a fury that was terrifying – 'Spanish influenza.' It swept over Europe, attached the boys in camp and was soon terrifying our men in camp and their people back home. It was more terrifying because doctors knew so little to do for it. They ordered quarantines. Early in October 1918, our doctors ordered the closing of our schools and churches. Shut in at home our little boy Sunday afternoon begged to go to church to get the story paper. We found the streets deserted, hardly an automobile to be seen.
>
> At first I went to visit the sick only when the need seemed pressing. Soon I learned of the tragic loneliness among the people. One of my women told me she had half-a-dozen children sick, her son in France wounded, even her neighbor next door afraid to come over, and the loneliness was dreadful. I began to go everywhere for a word of cheer and a prayer, and soon I was down and dangerously ill, my wife, by doctor's orders, entering my room with a mask only when needed. One of my families I found desperate, all in a bed; the husband and father said, himself not a Christian, "If ever people needed God, it is in such a time as this."
>
> For me, at least, the climax came, alike for the war and the epidemic, Nov. 11, 1918, a day now famous as 'Armistice Day.' It was Sunday night. Alone in my up-stairs room, critically ill and nervous, in the twilight I heard the newsboys pass

[322] *The Daily Free Press* (Kinston, NC), December 17, 1918; "Allegorically Speaking," 1-4.

> crying "Extra"' Isabelle now and then came to the door to explain: "Kaiser abdicates; all W. Germany is in revolt." Already Bulgaria, Turkey, Austria had surrendered. It had been announced that, if peace came, bells would ring. In the afternoon they began ringing. Mothers with boys 'over there' later told me they heard and wept. I did too.
>
> In minutes, pandemonium broke loose – bells ringing, autos honking, crowd surging by on wild celebration along main street, the din a torture almost unbearable to me. At day we phoned the doctor; he came at 9 that night – hadn't been to bed in two days.
>
> The epidemic I remember with more horror than the war. It killed some lovely neighbors and pillars in the churches. I began soon to visit much, sometimes wearing a mask, for one might have it again. Our church had been closed for two months. The Rock Spring deacons appealed to me at a funeral to give them a service – closed since September, and were 'hungry for one.' I gave them one Christmas day.
>
> My diary noted this period as 'the blackest of my life' – war, influenza, death all around me. But it did much to give me depth, and I wrote of it, 'Nothing by God and goodness has real value.' It seemed like the climax in January when a telegram took me to Burlington to have part in the funeral of my beloved John Vernon, dying of influenza-pneumonia, I going and coming (train) with W.H. Fogelman, already stricken fatally with it, destined to infect and kill his lovely wife.[323]

Pastor Morgan wrote extensively on his life as a preacher, decades of memoirs totaling thousands of pages, so it is surprising that his recollection of the epidemic ends to abruptly. His account of the time of the epidemic prior to the end of the war is full of rich detail, as is that of the armistice itself, but the subsequent months of the epidemic pass in a blur, barely mentioned. Morgan admits that he sees the war and the epidemic both having climaxed together even though the epidemic continued for months after the end of hostilities, and his effort to fold the remaining three to four months of the epidemic into one short paragraph is evident.

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[323] "The Great War, the Great Epidemic" Chapter XIV p. 90-92, in the S.L. Morgan Papers #4228, Folder 407, Southern Historical Collection, The Wilson Library, University of North Carolina at Chapel Hill.

By February 1919, many North Carolinians were not only inured to the epidemic, but some were becoming angry at what they saw as the interference of the local boards of health into their daily lives.[324] On February 19, 1919, a member of the Alston family wrote from Chapel Hill, NC to their "dearest Lib" that, "I hope you have escaped the 'flu' and I hope you are well and strong. 'The Board of Health' is sending all soughts [*sic*] of nurses and doctors as you will see in the illustration 'why I would like too [*sic*] be and [*sic*] angel for a hour.' I gess [*sic*] the old Board of Health would have had enough then don't you? I escaped on by staying out on account [*sic*] of flu."[325]

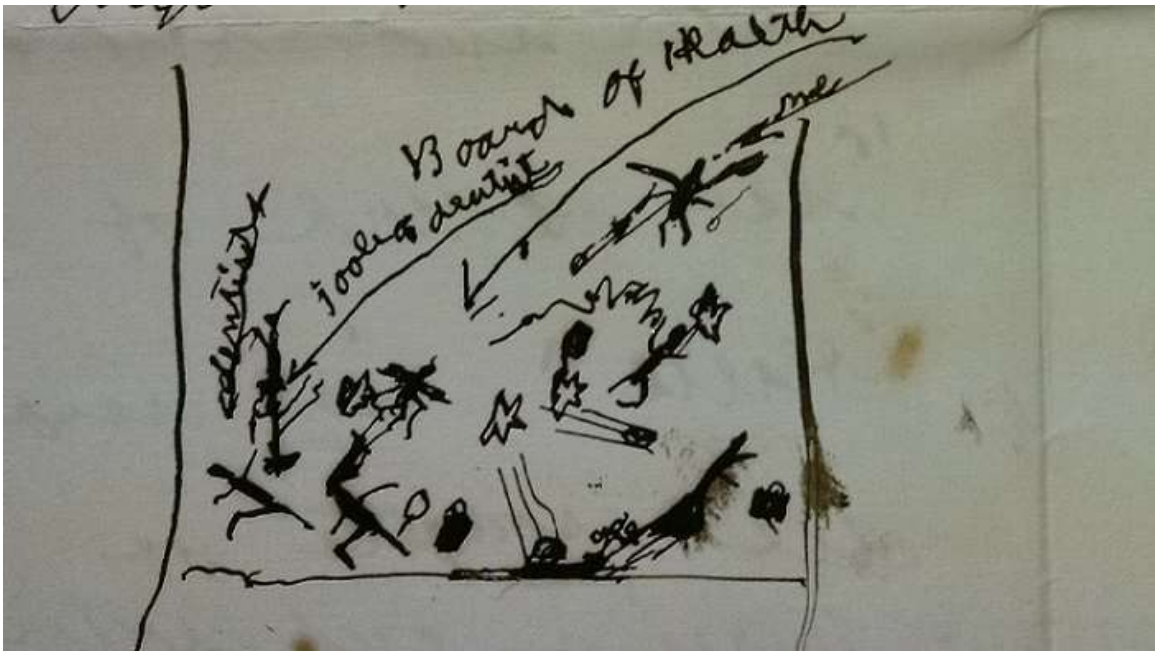

Figure 5 – 'Board of Health' Illustration, February 19, 1919[326]

[324] Such as the lawsuit filed by Rock Hill's movie theaters against the "arbitrary and capricious" local board of health. *The Charlotte Observer* (Charlotte, NC), February 13, 1919.
[325] Letter from Unknown to Lib (Unknown), February 19, 1919, Lucy Tunstall Alston Williams Papers, #04351, Folder 13.
[326] Illustration of 'Board of Health' drawn by Alston family member, February 19, 1919. From the Lucy Tunstall Alston Williams Papers, #04351, Folder 13.

The referenced illustration shows a messy cluster of individuals labeled 'dentists' being arrowed into an area by the "Board of Health" with many other individuals in the area erupting into crashed and burned outcomes. The illustration, while admittedly abstract, shows a lack of respect for the local board of health; in fact, the author of the letter first mentions the board of health with quotations around its title, suggesting that he thought the organization lacked power or was not to be taken seriously. This attitude is best understood if one realizes that Chapel Hill is located in Orange County, NC and remembers the Orange County Board of Health was only created in October 1918, after the local council of defense realized Orange County lacked a board of health and needed to establish one in order to pass epidemic quarantine edicts.[327] Perhaps to certain residents of Orange County, the creation of yet another government institution to enforce laws was unwanted. Regardless of its origin, the above illustration suggests anger toward the board of health for their interference and their hindrance in letting Orange County citizens return to the life they had before the war and before the influenza epidemic.

It is noteworthy that the majority of these letters between private individuals concerning the epidemic take place prior to the end of the war. Very few of them reference influenza at all after mid-November 1918, and if they do then it is with much brevity and occasional frustration or anger. Also significant is the fact that out of the thousands of collections examined at archives throughout the state, only the ones discussed within this article contained specific references to the 1918 influenza epidemic.[328] The remainder of the archives were either outside of the study period or, if

[327] Cameron, "War Activities," 75.
[328] For the purposes of this article, a purposive data collection approach was utilized. The author relied on keyword searches of collections that had previously been catalogued by archivists, as well as

they contained correspondence within the study period, then those letters/materials did not contain mention of the epidemic. Perhaps the individuals simply didn't remark on the epidemic or perhaps the collections are not complete; there is no way of knowing. All that can be examined is what does exist within the available archives.[329] This exploration of private correspondence during the time of the epidemic supports the idea that North Carolinians not only merged their influenza experience into that of the war, as previous scholars have suggested,[330] but also that they grew weary of the epidemic, of its endless death, its loneliness, its restrictions, and its impediment to the return of normalcy after the war. In some situations, this change in feeling towards the epidemic was a sharp turn, as people admitted that they "hardly noticed" death anymore as early as late October 1918. North Carolinians were truly fighting their own domestic war against influenza and they dealt with it as a soldier deals with the horrors of war: by putting it out of mind as soon as the immediate threat to them and their closest associates seemed no longer impending.

CONCLUSION

Through the use of archival materials, newspapers, and personal correspondence, this article explored both the impacts felt by North Carolina's citizens at the state, county, and individual levels and how such an experience came to all but disappear from the

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recommendations from the archivists themselves. This collection method is an accepted and widely used research approach in the field of public policy.

[329] No predominately African-American newspaper from the time is available on www.newspapers.com. The archivist at the Carolina Room at the Charlotte-Mecklenburg Public Library related that the 1918-1919 epidemic occurred during a gap in coverage of American-American newspapers throughout the state and that finding one to include in a qualitative analysis of state newspapers would be highly unlikely. Therefore, a comparison of how white newspapers covered the epidemic compared to black newspapers could not be made within the scope of this article.

[330] *Crosby, Forgotten Pandemic*, 320; Hume, "The 'Forgotten,'" 898-915; Outka, "Wood," 944-946.

history of the state even before the epidemic finished running its course. This article shows that not only was the epidemic subsumed within the historiographical narrative of World War I, perhaps in an effort to rationalize the additional loss of life and emotional trauma, as both Outka, Hume, Crosby argue, but also that on the home front, the citizens of North Carolina were encouraged by the State Board of Health and local public health officials to silently deal with the epidemic at home and quietly deal with the epidemic at the community level through local relief programs. This silent struggle with such a widespread disease caused a sense of acceptance in the population; within a short period of time, influenza became absorbed into the lifestyle of North Carolinians and they very soon ceased to be shocked by it and in some ways became desensitized to it.

This article demonstrates that the influenza experience, while varied in mortality levels across the state, was consistent among North Carolina's residents. They all greatly feared the epidemic in late September and early October 1918, to the point that citizens remember even being afraid to breathe. One Goldsboro, North Carolina resident recollected about the height of the epidemic that:

> I felt like I was walking on eggshells. I was afraid to go out, to play with my playmates, my classmates, my neighbors. I was almost afraid to breathe. I remember I was actually afraid to breathe. People were afraid to talk to each other. It was like - don't breathe in my face, don't even look at me, because you might give me germs that will kill me. Farmers stopped farming, merchants stopped selling. The country more or less just shut down. Everyone was holding their breath, waiting for something to happen. So many people were dying, we could hardly count them. We never knew from one day to another who was going to be next on the death list.[331]

[331] Recollection of Dan Tonkel from Goldsboro, NC. Contained in John M. Barry, *The Great Influenza: The Epic Story of the Deadliest Plague in History* (New York: Penguin, 2004), 346.

However, they also all seemed both to grow weary of and to have adjusted to it by late October. Perhaps the North Carolina experience in the fall of 1918 illustrates the adaptability of humanity: North Carolinians incorporated the epidemic into their daily existence so quickly that in letters they admitted that they failed to notice its consequences anymore. But perhaps the epidemic experience can be better seen as a cautionary tale against how quickly we can become inured to something that we need to continue to fight against. This lesson is evident today with regards to HIV/AIDS prevention; despite the initial fear of the AIDS epidemic, recent studies show that medical communities have decreased the overall number of universal free condom distribution programs and that the gay community reports relaxed attitudes around the seriousness of HIV as a result of HIV treatment optimism.[332]

Whether a population's inurement to an epidemic is caused by the encouragement of institutions to retain a sense of normality in the face of war or the tenuous hope brought about by treatment optimism, the danger of this attitude is that if those who live through an epidemic cease to fear the disease or its outcomes or to even discuss them, then those who follow afterwards will either not fear the threat enough to take precautions against it or else fail to know of the threat at all. Therefore, a major implication of a population failing to incorporate an event of such catastrophic proportions as the 1918 influenza epidemic into individual or societal consciousness is that subsequent generations lose sight of both the magnitude of loss caused by the event and the possibility of a similar event occurring in the future. Either the lack of lessons

[332] For more information see, Christian Grov. "Gay Men's Perspectives on HIV Prevention and Treatment in Berlin, Germany: Lessons for Policy and Prevention." *International Journal of Sexual Health* 29:2 (2017), 124-134.

from the past or the failure to prepare for the future can both result in a devastating loss of life in the event of a future influenza epidemic similar to that experienced in 1918. Inurement to the epidemic of 1918, while indicative of the resiliency and strength of the surviving post-World War I generation, also helped created a dangerous environment in which we are woefully underprepared for future large-scale epidemics.

As Shylock notes in the January 1919 *Health Bulletin*, the greed of merchants to end restraints on businesses and resume their income, the greed of the newspapers to retain their advertising which led them to cease printing stories urging citizens to stay at home, the desire of the people to have a normal holiday season, and the urging of officials and government offices to provide an atmosphere of normality for returning soldiers all weakened efforts to contain the epidemic and likely fostered flu resurgences throughout the winter and early spring of 1919. Those who noted the follies of the majority of North Carolinians in returning to their pre-war mindsets and actions so quickly in the face of the ongoing epidemic were quick to point out the error of this weakening of resolve to maintain the struggle against the epidemic:

> We who have seen these things and have done our little bit to aid and comfort have sometimes felt inspired when we could give a measure of relief and have felt that our efforts were worth while. And when we would fail to comfort or save we could not help but sympathize and express regret.
>
> And these phases of suffering humanity makes us doubt that dollars should be considered of more value than human lives.[333]

This observation does not mean that North Carolinians did not provide aid and relief when possible. This article has shown that local government agencies, mill owners, and private citizens worked tirelessly in late September and October 1918 to provide

[333] "Allegorically Speaking," 4.

influenza victims with the care that they needed. However, this care was sharply curtailed after the end of the war whereas the epidemic itself was not. The soup kitchens, meal deliveries, and rotating systems of in-home care established in many mill towns and other communities across the state in September and October 1918 are not found in documents or recollections dated after December 1918. The disappearance of community programs after the fall of 1918 does not mean that North Carolinians grew callous about the fate of their ill neighbors and fellow citizens. However, the disappearance does demonstrate a shift from viewing the epidemic as a community-level problem to viewing it as an individual-level issue. This shift was a product of government suppression of and the citizens' inurement to the epidemic struggle, a change which occurred simultaneously with the end of the war in early November 1918.

As the news of the end of the war crossed the sea towards America in November 1918, North Carolinians braced for its welcoming change of lifestyle. For the duration of their involvement in World War I, state and local officials had told them to put on a brave face, do their part for the war effort, and not complain about the hardships and government regulations that fighting a war brought to those left at home. Consequently, when the epidemic struck in September 1918, North Carolinians approached the disease with the same stoic determination. It was not so much that they identified the epidemic with the war itself and therefore wrapped the two together in memory; it was more that the epidemic became their own war to fight on the home front. While they feared influenza privately, their public response was one of purpose and fortitude in overcoming the "strange, deadly plague."[334]

[334] Wheaton, *Thomas Wolfe*, 170.

This purposeful approach, combined with the continued directives from state and local governing bodies to stay calm, not panic, and be grateful that they were fighting influenza instead of the Hun, quickly caused a sense of acceptance and weariness in the people of North Carolina towards the epidemic. Not only did the majority of North Carolinians cease becoming shocked at the ravages of the epidemic in a short period of time, but they also seem to have become unconscious of it almost immediately. Perhaps it was too horrific to remember, perhaps it had been so terrifying that it was easier to push recollections of it to the fringes of memory, and perhaps they felt that there was no point in dwelling on an enemy that one could not see and had little recourse to fight. In a very short period of time, a matter of weeks, the influenza epidemic of 1918-1919 became so entangled in the experience of North Carolinians that they came to view it as commonplace and therefore unworthy of discussion. Consequently, they opted to actively ignore this monstrous killer that stalked their numbers for months during those fateful fall and winter seasons. Over time, this ignoring of the epidemic led to its being essentially lost from most citizens' recollection of the World War I and post-war periods, causing it to become effectively forgotten.

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CHAPTER 4: CONCLUSION

The two articles contained in this dissertation show that North Carolina's experience during the 1918-1919 influenza epidemic was in some ways unique to her population and in others approximated the overall national experience. The North Carolina which suffered the trials of the epidemic is in many ways different from the North Carolina of today: her population today is significantly larger and more diverse; a public health system is established and utilized in all counties; there are statewide healthcare systems in use; and, while many areas still remain largely rural, she has shed many of the characteristics found in her early twentieth-century population, such as child farm and industrial labor, poor sanitation practices, and racial segregation. Based on these changes, can any policy recommendations suggested by this dissertation be used to better the potential outcome within North Carolina if another epidemic or pandemic should strike her population? The answer is a resounding yes, but those policy recommendations are not without challenges.

A CONTINUING NATIONAL AND INTERNATIONAL THREAT

In a world of competing scholarship, academic, and scientific research, one thing that most researchers agree on is that another influenza pandemic is coming. In fact, we are overdue. Influenza historian John M. Barry states that "virtually every expert on influenza believes another pandemic is nearly inevitable, that it will kill millions of

people, and that it could kill tens of millions – and a virus like 1918, or H5N1, might kill a hundred million or more – and that it could cause economic and social disruption on a massive scale."[1] Barry also points out that this economic and social disruption itself could become deadly. If the next pandemic is influenza, will it be a new strain that is mutated or a recycled form of the virus which was so robust in the population during the fall and winter of 1918-1919? Perhaps even now, in some innocent encounter between a child and a bird, a new killer flu is being transferred to humans. Or perhaps a man or woman have become infected with two different strains of flu viruses and, those viruses subsequently mixing together after physical contact and a mixing of genetic material, have begun to mix together within their lungs, mutating into a destructive chimera similar but still different from that seen in 1918.[2] It is impossible to know from where the next pandemic will come but it is almost certain that, living in a world with four times the number of inhabitants than it did had 1918, with millions of people, pigs, and poultry living close together, every corner of the world easily accessible to any other point within hours, with American hospitals stocking no more than a few day's supply of most lifesaving drugs at any given time, and the majority of those drugs being manufactured abroad, we are at once both wholly unprepared and ideally situated for another influenza outbreak.[3]

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[1] John M. Barry. "1918 Revisited: Lessons and Suggestions for Further Inquiry," in *The Threat of Pandemic Influenza: Are We Ready?* ed. Stacy L. Knobler, Alison Mack, Adel Mahmoud, and Stanley M. Lemon (Washington, DC: The National Academic Press, 2005), 68.
[2] Gina Kolata, *Flu: The Story of the Great Influenza Pandemic of 1918 and the Search for the Virus that Caused It* (New York: Farrar, Straus and Giroux, 1999), 306.
[3] Michael T. Osterholm and Mark Olshaker. "A Flu Pandemic is Coming." *New York Times,* 9 January 2018, A23.

One of the main issues in preparing for a future outbreak of any contagious disease is that each pandemic unfolds in a different way.[4] Influenza pandemics occur when a novel animal flu virus mutates and acquires the ability to infect humans and they, in turn, transmit it to other humans.[5] In their 1978 book, "The Swine Flu Affair: Decision-Making on a Slipper Disease," Richard E. Neustadt and Harvey V. Fineberg argue that influenza is an exceptionally "slippery" disease for five main reasons. First is the changing character of the influenza virus, with spread and timing hinging on antigenic change about which we know painfully little.[6] This problem may be evident in the findings of this dissertation which demonstrate that the flu strain that circulated in October 1918 produced different virulence and mortality levels for age groups than did the strain circulating in March 1919, suggesting a strain mutation in that five-month period. If a disease constantly mutates, then how can we protect ourselves against it?

This question leads to the second of Neustadt and Fineberg's issues, which is that the effectiveness of an influenza vaccine is relatively short-lived. Its effectiveness may be compromised by mutations in the virus, which are frequent. Also, most experts believe that, even in the absence of virus mutations, effective vaccine protection lasts only for about one year.[7] Unlike vaccines for communicable diseases such as measles, smallpox, and mumps which remain the same, researchers creating effective vaccine for influenza must not only accurately estimate which strain or strains of influenza are most likely to be circulating during the flu season, but also account for mutations within that strain

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[4] Alice Dautry. "Foreword," in *Influenza and Public Health: Learning from Past Pandemics*, ed. Tamara Giles-Vernick and Susan Craddock (London: Earthscan, 2010), xiv.
[5] Osterholm and Olshaker. "A Flu Pandemic is Coming," A23.
[6] Richard E. Neustadt and Harvey V. Fineberg. *The Swine Flu Affair: Decision-Making on a Slippery Disease* (Washington, DC: National Academies Press, 1978), 83.
[7] Ibid., 83.

during the lifespan of the vaccine. For example, the Centers for Disease Control and Prevention (CDC) published interim vaccine effectiveness estimates in February 2018 that this year's flu vaccines were 36% effective against influenza A and B. However, the vaccine effectiveness for children aged nine to seventeen years was listed as -8% effective, suggesting that no vaccine effectiveness against medically attended influenza could be measured in the sample group.[8] These numbers suggest that current vaccines are not universally effective or reliable, while they do help approximately a third of the population avoid catching influenza or reduce its severity.

Along with flu vaccines, physicians can now also offer patients post-onset antiviral flu medications such as Tamiflu in order to reduce the risk of influenza complications such as pneumonia, as well as to reduce the duration of flu symptoms by one to two days.[9] However, while antivirals can eliminate the influenza virus from the body before the virus can predispose respiratory epithelial cell receptors to become infected with pneumonia-causing bacteria if taken early enough, antivirals do not treat pneumonia itself if that bacteria is already present.[10] Also, the flu virus itself can cause complications in which the virus and not bacteria invades the lungs and causes them to swell, blocking the flow of oxygen.[11] This swelling of the lungs, often occurring quickly, can be life-threatening even in a hospital setting. In 2014, the CDC ranked pneumonia combined with influenza as the eighth leading cause of death in the United States.[12] The

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[8] Centers for Disease Control and Prevention. "Frequently Asked Flu Questions 2017-2018 Influenza Season." 2018. https://www.cdc.gov/flu/about/season/flu-season-2017-2018.htm
[9] Teresa Carey and Nsikan Akpan, "Does Tamiflu Work? We Asked a Scientist," March 9, 2018. https://www.pbs.org/newshour/science/does-tamiflu-work-we-asked-a-scientist
[10] Ibid.
[11] Shannon Johnson and Diana Wells, "Viral Pneumonia: Symptoms, Risk, Factors, and More," March 15, 2017. https://www.healthline.com/health/viral-pneumonia
[12] Ibid.

uncertain and often swift onset of either viral or bacterial pneumonia during influenza, as well as the lack of a universally effective flu vaccine means that modern physicians are in many ways little better equipped than their 1918-1919 predecessors to treat either the flu or the accompanying pneumonia.

Thirdly, influenza symptoms are widely misunderstood. Many people and physicians still refer to any gastrointestinal trouble as "stomach flu." However, influenza is found in the respiratory tract only. Fourth, while the influenza virus resides in the respiratory tract, it is not the only virus found there and may consequently not be the main source of an individual's flu-like aches and fever. Therefore, an effective influenza vaccine may not necessarily prevent a patient from experiencing identical flu symptoms from another source. Fifth and finally, these numerous flu-like illnesses make it difficult to estimate the annual impact or prevalence of influenza on public health.[13] Because the signs and symptoms of influenza vary greatly among patients and many other diseases are capable of producing similar flu-like symptoms, it can be difficult to know exactly what is affecting the population at any given time.

Despite these challenges, researchers and academics frequently call for a universal vaccine to be developed against influenza. Michael Osterholm and Mark Olshaker argue that we are vastly underprepared to fight another global pandemic such as that seen in 1918-1919. They claim that our use of influenza vaccines based on 1940s research is the same as trying to stop an advancing battle tank with a single rifle.[14] They argue that the only real solution is a universal influenza vaccine that effectively attacks

[13] Neustadt and Fineberg. *The Swine Flu Affair,* 83.
[14] Osterholm and Olshaker. "A Flu Pandemic is Coming," A23.

all influenza strains, with reliable protection lasting for years, like most other modern vaccines. However, Osterholm and Olshaker also point out that the funding for developing such a vaccine is lacking, falling far short of the one-billion-dollar annual budget still in place for the development of an HIV vaccine. In part, faulty risk-assessment may be involved in the lack of focus of government funding on a universal flu vaccine. Recent national security strategies reference both Ebola and SARS – low probability but high impact threats – as potential bioterrorism and pandemic threats. In contrast, no mention is made of pandemic influenza, which constitutes a high probability and high impact threat.[15] Perhaps this unequal funding or strategic planning is a result of the ever-changing and uncertain nature of influenza that leads the National Institute of Health to judge that development of an effective vaccine in the near future is unlikely. How can you plan for or fight against an unknown and inconsistent enemy?

After many years of research and many failed attempts, researchers finally isolated the strain that caused so much devastation in 1918, having found preserved lung tissue samples of several soldiers who died during the epidemic.[16] This finding allowed federal scientists to develop a vaccine that protects mice against the killer influenza virus as well as a technique for identifying antibodies that neutralize this flu strain.[17] Such a finding shows that even killer flu strains can be protected against, although only

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[15] Osterholm and Olshaker. "A Flu Pandemic is Coming." A23.

[16] For more information see, Ann H. Reid, Thomas G. Fanning, Johan V. Hultin, and Jeffrey K. Taubenberger, "Origin and Evolution of the 1918 'Spanish' Influenza Virus Hemagglutinin Gene," *Proceedings of the National Academy of Sciences* 96:4 (February 1999), 1651-1656, Gina Kolata, *Flu: The Story of the Great Influenza Pandemic of 1918 and the Search for the Virus that Caused It* (New York: Farrar, Straus and Giroux, 1999), and Jeffrey K. Taubenberger and David M. Morens, "1918 Influenza: The Mother of all Pandemics." *Emerging Infectious Diseases* 12:1 (January 2006) 15-22.

[17] National Institutes of Health, "Experimental Vaccine Protects Mice Against Deadly 198 Flu Virus." October 17, 2006. https://www.nih.gov/news-events/news-releases/experimental-vaccine-protects-mice-against-deadly-1918-flu-virus

retroactively at this point. However, as discussed above, it is unlikely that this exact same flu strain would circulate again, unmutated and therefore susceptible to the developed vaccine. In all likelihood, as suggested by Neustadt, Harvey, Osterholm, Olshaker, and Barry, any future influenza pandemic would be a unique strain never seen before. No previous vaccines would be fully effective, and the human population would be scrambling to protect itself in any way possible. An example of this occurred in the 1970s and came to be known as the swine flu affair.

In 1976, several soldiers at Fort Dix, New Jersey began complaining of flu-like symptoms. One soldier collapsed and died during a five-mile ruck march (a march in which a soldier wears all of their military gear). Testing of the victims showed evidence of H1N1 swine Influenza A, similar to the 1918 H1N1 influenza type. This finding prompted the idea that a virus like the 1918 influenza strain had begun to circulate again, prompting President Ford to call for mass immunization against the swine flu. The immunization program was carried out nationwide with mixed results. Approximately one-fifth of the country was inoculated in one year. Many people lauded the "better safe than sorry" response by the government. Others refused to get the vaccine despite the government's urging. Reports of Guillain-Barré syndrome were connected to the immunization, leading some to argue that the hyper response was premature.[18] Both the reports of Guillain-Barré syndrome and the fact that no epidemic appeared resulted in the suspension of the program.[19] The swine flu affair failed to determine the best course of action if a new virus strain appears: wait to see if it develops into a widespread epidemic

[18] Harvey V. Fineberg. "Preparing for Avian Influenza: Lessons from the 'Swine Flu Affair.'" *The Journal of Infectious Diseases* 197:Supplement 1 (15 February 2008), S14-S18.
[19] For more information, see Richard E. Neustadt and Harvey V. Fineberg. *The Swine Flu Affair: Decision-Making on a Slippery Disease.* Washington, DC: National Academies Press, 1978.

necessary of national attention while developing and stockpiling a potential vaccine or immediately face it with large scale aggressive intervention. This dilemma is complicated by the fact that time is necessary to produce and test vaccines; the usual method of large scale preventative vaccines is to stockpile the vaccine or antiviral drug. However, the swine flu affair did provide useful lessons to current health policy: it was the first time biomedical knowledge promised to give the government the power to prevent a potential pending catastrophe, it marked the advent of liability coverage and other insurance issues as major constraints on health policymaking, it marked the necessity of developing an effective media strategy to communicate via television, and it demonstrated the potential for disaster when officials and stakeholders erect a dichotomy between decision-making based on science or policy versus that which is political.[20]

It is impossible to know the source of the next epidemic or pandemic, but a future influenza epidemic of some severity seems inevitable. Consequently, the Institute of Medicine of the National Academies (IOM) held a workshop in 2004 to discuss the likelihood of a future influenza pandemic, as well as issues related to the preparation and protection of the global community in such pandemic. The workshop identified several unmet needs and goals for future research. The unmet needs were labeled as: closing the gaps in global infectious disease surveillance and reporting; integrating animal and public health communities for better appreciation of a research on the implications for animal diseases in human populations; exploring compensation to farmers or even entire countries for preemptive culling of poultry or livestock if necessary to prevent influenza

[20] William P. Brandon. "In the Age of Bioterrorism, an Affair to Remember: The Silver Anniversary of the Swine Flu Epidemic That Never Was." *Politics and the Life Sciences* 20:1 (March 2001), 85-90.

spread; promoting the use of rapid, inexpensive influenza diagnostics in both humans and animals, which would also encourage more prudent and effective use of both vaccines and antiviral drugs; increasing demand for annual influenza immunization and antiviral therapy and prophylaxis; creating international stockpiles of antiviral drugs and vaccines for known flu strains; and finally, establishing international protocols for research during a pandemic in order to gain a greater understanding of the clinical, epidemiological, and biological nature of influenza.[21] Professor Lawrence O. Gostin notes that such large-scale public health interventions, while helping halt the spread of infection, can have dire effects on the economy and politics of a nation. Trade, travel, tourism, and agriculture are affected, as well as a country's prestige and sociopolitical standing.[22] While public health officials have a duty to protect the population's health, it is crucial that they do so ethically through the use of transparency, the protection of vulnerable populations, fair treatment, social justice, and by utilizing the least restrictive method to halt the threat.[23]

The workshop also found that future research needs to determine the molecular basis of influenza pathogenesis, predict the threat posed by a particular influenza strain by analyzing key sequences in its genome, and increase the overall efficacy of influenza vaccines.[24] The above policy and research recommendations are suitable for the global community but what about smaller communities such as those found in North Carolina and the state itself?

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[21] "Summary and Assessment," in *The Threat of Pandemic Influenza: Are We Ready?* ed. Stacy L. Knobler, Alison Mack, Adel Mahmoud, and Stanley M. Lemon. Washington, DC: The National Academic Press, 2005. 3-5.
[22] Lawrence O. Gostin, "Public Health Preparedness and Ethical Values in Pandemic Influenza," in *The Threat of Pandemic Influenza: Are We Ready?* ed. Stacy L. Knobler, Alison Mack, Adel Mahmoud, and Stanley M. Lemon (Washington, DC: The National Academic Press, 2005), 357-372
[23] Ibid., 367-368.
[24] "Summary and Assessment," 5-7.

POLICY RECOMMENDATIONS

The findings of this dissertation suggest several policy recommendations appropriate for both state-level populations, as well as smaller communities. The findings of the quantitative chapter suggest that unequal treatment time or access to health care during the epidemic was prevalent in certain subgroups of the population, specifically black males and black females. This suggests that in early twentieth-century North Carolina, minorities received less overall healthcare than did the white population, a finding which is unsurprising given that North Carolina was still a segregated state at the time of the epidemic. However, current public health officials should examine whether minorities presently living in North Carolina have equal access to medical treatment and health care in the event of a widespread outbreak of communicable disease or some other threat to population health such as an environmental disaster. Access to a more stable form of medical insurance and the expansion of neighborhood health centers are possible ways in which the government could alleviate healthcare disparities found in the poor and minority groups.[25] So too is the expansion of Medicaid under the Affordable Care Act. The North Carolina Department of Health and Human Services Office of Minority Health and Health Disparities was established in 1992 by the North Carolina General Assembly. The mission of the office is to "promote and advocate for the elimination of health disparities among all racial and ethnic minorities and other underserved populations in North Carolina," with the aim that "all North Carolinians will enjoy good health regardless of race/ethnicity, disability, or socioeconomic status."[26] North Carolina's

[25] Charles L. Schultz. *The Public Use of Private Interest.* Washington, DC: The Brooking Institution, 1977. 62.
[26] "About Us." North Carolina Office of Minority Health and Health Disparities. May 30, 2017. http://www.ncminorityhealth.org/aboutus.htm

policymakers should ensure that this office of N.C. Health and Human Services is aware of the disparities found in the treatment time and health care provided to minorities in North Carolina during the previous epidemic and that policies have been put into place to guarantee equal access to treatment time and healthcare for all citizens during future epidemics.

The finding that, when controlling for age, single individuals were less likely to die from influenza than were married individuals during the 1918 epidemic although they were more likely than married individuals to die from all other causes, is one that should be examined in future research. This finding suggests that some aspect of the single individual's lifestyle during the epidemic gave them a certain amount of protection from the spread of the disease. This protection most likely came in the form of self-quarantine and consequent lower levels of exposure to the highly contagious influenza virus. This suggests that quarantines during epidemics can be effective and policymakers should examine the likelihood of developing effective quarantine policies to implement in the event of a future outbreak. This recommendation is supported by the findings of the qualitative chapter, which showed that areas which attempted to enforce quarantines reported a decrease in influenza spread. The largest problem with quarantine policies is that they are difficult to enforce, a fact also supported by the frustrated remarks from public health officials outlined in the qualitative chapter.

In their 2001 article, Barbera *et al.* outline the key considerations in making large-scale quarantine decisions. The first is whether public health and medical analyses warrant such an imposition; second is whether the implementation and maintenance of such a quarantine are feasible; third is whether the potential benefits of a large-scale

quarantine outweigh the possible adverse consequences, such as negative economic effects and issues related to the punishment of civilian noncompliance. Barbera *et al.* conclude that public health disease containment measures must be based on scientific, disease-specific analysis, that we must invest in new informational tools and emergency management systems that improve situational awareness during disease outbreaks, that we must provide incentives to foster public compliance, and that we must devote resources to developing robust public communication strategies commensurate with the critical importance of a large-scale quarantine.[27] A large-scale quarantine during the 1918 epidemic was not feasible due to a lack of an established statewide public health system or a system that could enforce such a quarantine, including the prosecution of noncompliant individuals with the utmost vigor. North Carolina is currently better situated to implement a quarantine when necessitated by another killer pandemic, but as discussed by Barbera *et al.*, there are many aspects of such a quarantine that policymakers and public health officials should address both beforehand and at the onset of such a pandemic.

One of the main policy recommendations that stems from this dissertation is the increased support for and funding of the creation of a universal influenza vaccine. As Osterholm and Olshaker argue, a universal vaccine is the global community's best hope against the prevention of another killer pandemic like that experienced in 1918, despite the difficulties of such a feat. All other policy recommendations stemming from the findings of this dissertation are aimed to prevent the spread of influenza during future

[27] Joseph Barbera, Anthony Macintyre, Larry Gostin, *et al.* "Large-Scale Quarantine Following Biological Terrorism in the United States: Scientific Examination, Logistic and Legal Limits, and Possible Consequences." *Journal of the American Medical Association* 286:21 (2001), 2711-2717.

epidemics, but the best solution would be to prevent the onset of such an outbreak at all. The residents of North Carolina, both in 1918 and today, exhibit the varying and complex characteristics of humanity: stubbornness, selfishness, noncompliance, self-serving, fearfulness, giving, compassion, helpfulness, and altruism. Consequently, it will always be difficult to implement epidemic policies such as temporary vaccinations and quarantines; people will inevitably refuse to take part in one or both requirements. Therefore, the best outcome would be to prevent the onset of the epidemic instead of fighting its inevitable spread. To do so, the scientific and healthcare communities must come together and work harder to create a universal influenza vaccine, or at least one that is more effective and longer lasting than current year-to-year vaccines.

Another main policy recommendation from the findings of this dissertation calls for better communication and trustworthiness from both federal and state officials. As influenza historian John M. Barry argues, one of the main shortcomings of the government during the 1918 epidemic is that it was so focused on promoting war propaganda that it failed to acknowledge or provide sufficient information about the epidemic to the public.[28] The qualitative chapter of this dissertation illustrated that the federal government, state officials, and the media all failed during the course of the epidemic to provide accurate or ample information to North Carolinians. In fact, officials and newspapers downplayed the epidemic and told citizens that there was no reason to panic, even encouraging them to silence their fears and put on a brave face for returning soldiers. Such information and enforced behavior does not encourage trust in one's

[28] For more information see, John M. Barry, *The Great Influenza: The Epic Story of the Deadliest Plague in History* (New York: Penguin, 2004), Chapter One.

government or officials. As John M. Barry argues, "Ultimately, society depends on trust. Without it, society began to come apart. Normally in 1918 America, when someone was ill, neighbors helped. That did not happen during the pandemic. The disease generated fear independent of anything officials did or did not do, but the false reassurances given by the authorities and the media systematically destroyed trust."[29] The depletion of trust magnified the fear of the citizens and turned it into panic and terror. Barry also points out that this terror did not seem to materialize in locations where authorities told the truth about the epidemic.[30]

By not being entirely truthful with the population about the epidemic, officials and the media in North Carolina created an environment in which people thought they could not openly discuss their fears, which resulted in them repressing them and eventually, and quickly, becoming blind to the tragedies of the epidemic. This inurement resulted in the social silencing and seeming forgetfulness of the 1918 epidemic, a phenomenon that reached not only across North Carolina but the entire nation. Barry claims that in "any crisis, it is absolutely critical to retain credibility. Giving false reassurances is the worst thing one can do."[31] The findings of the qualitative chapter of this dissertation support that claim. During any future epidemic, officials and members of the media should strive to tell the public the truth and allow them to not only be informed about the situation but also feel free to openly express their fears. Future epidemic policies should ensure that citizens are given the complete and unbiased information

[29] Barry. "1918 Revisited," 66.
[30] Ibid.
[31] Ibid.

necessary to protect themselves physically, mentally, and emotionally from the trials and tragedies attached to killer pandemics.

As professors Richard Neustadt and Harvey Fineberg argue, "influenza may not be the source of the next hard case. Indeed, it almost certainly won't be, unless and until someone foresees another killer wave, another 1918. The next hard case is likelier to come from somewhere else and, superficially, seem different."[32] Other researchers agree with them, citing influenza, coronaviruses such as SARS, and flaviviruses such as West Nile and Zika as the most likely candidates for the next catastrophic outbreak.[33] We cannot know what the future will bring and in what form the inevitable next pandemic will present itself. The World Health Organization recently added a mysterious, yet-to-exist malady to its list of nine disease that may cause a worldwide epidemic. "Disease X" is not a newly identified killer pathogen. It is a "known unknown," a disease created by the biological mutation of previous epidemics such as the 1918 epidemic or HIV, the result of a terror attack, or simply an accident. The organization stated that "Disease X represents the knowledge that a serious international epidemic could be caused by a pathogen unknown."[34] The inclusion of this currently nonexistent disease on their list of biggest epidemic threats is not to scare the general public but to demonstrate that the erratic nature of infectious diseases is serious and public health officials should make

[32] Neustadt and Fineberg. *The Swine Flu Affair*, 76.
[33] Ralph Baric, "Are We Prepared for the Next Superbug Outbreak?" *Carolina Public Health* 3:3 (Fall 2017), 10-11; For more information on SARS see Karl Taro Greenfeld, *China Syndrome: The True Story of the 21st Century's First Great Epidemic* (New York: Harper Collins Publishers, 2006).
[34] Eileen Connelly, "'Disease X could be the world's worst nightmare." *New York Post* (March 10, 2018). https://nypost.com/2018/03/10/disease-x-could-be-the-worlds-worst-nightmare/

sure that they are prepared for all threats, even those that are unknown and unpredictable.[35]

Learning from past epidemics allows us to make policies that will provide better outcomes for future populations who are thrust into the midst of epidemiological disasters. Perhaps society should have paid more attention to the dangers and weaknesses outlined in Thucydides' description of the 430 BCE epidemic in Athens. Thucydides remarked that the lack of effective medical treatment, universal vulnerability without protection by age, gender, status, piety, or wealth, the breakdown of social, health, and religious conventions and norms, and psychological and behavior responses all influenced the outcomes of the Athenian epidemic of 430 BCE.[36] However, the same characteristics apply to North Carolina's experience of the 1918-1919 influenza epidemic, suggesting that society as a whole has not greatly bettered its policies regarding the spread or treatment of, or official communication regarding highly contagious, widespread epidemics in almost 2,500 years. This dissertation shows that better access to treatment and healthcare for everyone, especially minorities, effective quarantine measures, supportive and fully communicative government officials, healthcare officials, and media members, as well as the expanded support and funding for the creation of a universal influenza vaccine are all policy recommendations that can be implemented in the future to protect not only North Carolina's citizens but perhaps the global community as well.

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[35] Ibid.
[36] Thucydides. "History of the Peloponnesian War." Translated by Richard Crawley. London: J.M. Dent & Sons, Ltd., 1914. 138.

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APPENDIX E

Figure 6 - Map of North Carolina with Labeled Counties[1]

[1] Map courtesy of North Carolina Maps project, Carolina Digital Library and Archives at the University of North Carolina at Chapel Hill. http://web.lib.unc.edu/nc-maps/browse_location.php