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Land Use Policy Impact on Health Equity in Rural America Counties

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Abstract

This dissertation investigates the relationship between land use policies and health equity in rural American counties. Utilizing a qualitative case study approach, the research scrutinizes eight counties across four states, examining publicly available data such as census details, land use policy documents, community health reports, and planning documents. The study is guided by two main research questions: 1) Are there land use policies in rural America that align with the creation of health equitable communities? and 2) Do health equitable communities within rural America feature equity in housing stock? The results from the thematic coding and content analysis of ninety-six documents revealed a nuanced relationship between land use policies and health equity. Counties with higher health equity rankings demonstrated more generalized land use policies. In contrast, counties with lower health equity rankings showed a lack of current Community Health Needs Assessments or Health Improvement Plans and less diversity in housing policies, potentially exacerbating health disparities. The dissertation concludes that while some rural counties exhibit land use policies supportive of health equity, there is significant variability across different communities. The findings suggest that targeted and inclusive land use planning could enhance health equity, particularly in counties with lower health rankings. This research underscores the need for policy reforms integrating health equity considerations into land use planning, offering potential pathways for future work to bridge the gap between land use policies and health equity in rural America.

Key words: Health equity, land use policy, zoning, social determinants of health, rural America

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Dedication

I would like to dedicate this document to my children, Oliver and Spencer Holmes. While I dedicated countless hours to this degree program, researching, and writing this document, they gave up time with their mom. They were asked to manage their own needs and were told, “We can’t do that this weekend, Moms got to work,” more times than I count. I generally do not encourage any working professional to sacrifice time with their family, and I consider family to be one of my driving core values. However, accomplishing a doctorate program will enhance not only my life, but theirs as well. Modeling for them the ability to balance and succeed in accomplishing a lifelong goal will hopefully be more fruitful than any weekend activity I denied them in the making.

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Chapter 1: Introduction

This dissertation focuses on the pivotal role of land use policies in shaping health equity within rural American counties. It delves into the nuanced ways in which these policies influence community health outcomes, particularly through their impact on housing equity and accessibility to essential resources. By examining the interplay between land use decisions and social determinants of health, this research seeks to uncover the underlying land use mechanisms that either facilitate or hinder the attainment of health equity in rural settings.

Purpose and Significance

The primary aim of this research is to investigate the alignment of land use policies with the principle of health equity in rural America. It endeavors to identify how these policies contribute to creating environments that support or impede equitable access to healthy living conditions. This includes an examination of housing stock equity as a crucial element of health equitable communities, given housing's significant role as a determinant of health.

Improving health equity is a critical component in reducing the overall U.S government expenditures on healthcare. Healthcare financed through public tax rate and provided through public insurances such as Medicaid and Medicare options account for 4.1 trillion dollars of the nation's expenditures (*Health and Economic Costs of Chronic Diseases | CDC*, 2023). Addressing health equity is part of the solution for reducing the need for more costly health interventions, it enhances the health of the community as a whole and therefore reduces the associated costs.

Problem Statement

Rural communities in America present a unique set of challenges for health equity due to their distinct geographic, demographic, and economic characteristics. Despite the potential

of land use policies to significantly influence health outcomes by shaping the built environment, there is a gap in understanding the extent to which these policies promote health equity in rural areas. Issues such as limited access to healthcare, economic opportunities, and substandard housing further exacerbate health disparities in these communities. This dissertation seeks to address the critical need for an in-depth analysis of land use policies and their impact on health equity in rural America.

Overview

The literature review provides an overview of how these two seemingly separate bodies of work, health equity and land use are related. The research reviewed includes health equity, a broad area of research with multiple aspects, definitions, and tools of measurement. The existing research leads to reasoning for the measurement tools chosen for the research design, focusing on measurable social determinants of health. There is little research focusing on health equity specifically in rural America, however there is some and what could be uncovered is addressed. The bigger issue at hand for rural America is the lack of concrete research and data, these large areas of the Unites States tend to be grouped while their cultures are unique and diverse. Health equity and housing is the metaphorical bridge between health equity and land use policy. Housing's impact on health equity is heavily researched and land use policy has a clear relationship with housing stock. This is covered within the literature review as well as possible solutions that have been identified such as regional collaboration and form-based zoning.

Theoretical Framework

The study is framed within the perspective of critical postmodernism, which provides a lens to examine how power dynamics and institutional decisions influence social inequalities.

This theoretical approach supports a deeper understanding of how land use decisions can perpetuate health disparities by favoring certain groups over others, thereby influencing who has access to necessary resources for a healthy life. The belief is that policy makers can structure land use policies in a way that could benefit health equity.

Research Questions

The dissertation is guided by two main research questions:

1. Are there land use policies that align with health equitable communities within rural America?
2. Do health equitable communities within rural America have equity in housing stock?

These questions are designed to explore the connections between land use policy, housing equity, and health outcomes in rural American contexts.

Research Design and Results

The study adopts a qualitative case study approach, focusing on eight rural counties across four states. The study employed a selective sampling approach. The United States is divided into four census areas, Northeast, Midwest, West, and South. One state from each area was selected, Main, South Dakota, Montana, and Oklahoma. Of these states two counties were selected, one that ranked high in health equity and one that ranked low in health equity that were similar in population size and with a rural designation. Essentially creating two cohorts, one set of high health equity and one of low health equity to be reviewed and compared. This design facilitates an in-depth examination of the relationship between land use policies and health equity, allowing for the exploration of contextual factors unique to each case, and overall as a cohort. The research involves a comprehensive analysis of publicly available documents,

including census data, land use policy documents, community health reports, and planning documents. Thematic coding and content analysis techniques are employed to extract relevant themes and patterns from the data, providing insights into how land use policies impact health equity and housing equity in rural areas.

There are limitations to this study, however there were correlations amongst the two cohorts. A clear difference between the two was the poverty rates as well as minimum functions being executed, such as community health needs assessments and health improvement plans being current or having updated zoning regulations. These similarities show a significant need for the two separate professions to collaborate to create policies that are health equitable.

Chapter 2: Literature Review

In recent years, the interdisciplinary discourse surrounding health equity has expanded to encompass various domains, recognizing the intricate interplay between social, economic, and environmental factors in shaping individual and community well-being. Central to this discourse is the recognition that land use policy, through its influence on the built environment, plays a pivotal role in determining access to resources, opportunities, and ultimately, health outcomes. In rural America, where rolling landscapes and tight-knit communities define the fabric of daily life, the intersection of health equity and land use policy takes on unique dimensions and challenges. Far from the bustling urban centers often at the forefront of scholarly inquiry, rural regions grapple with their own set of disparities, characterized by limited access to healthcare services, economic opportunities, and basic infrastructure. Against this backdrop, the role of public administration emerges as a cornerstone in navigating the complex interplay between land use decisions, social determinants of health, and the pursuit of equitable outcomes for rural residents.

By synthesizing existing scholarship and empirical evidence, this review identifies an underlying driver of health disparities in rural settings to be housing. Within this review the conceptual foundations underpinning the relationship between land use policy and health equity, including theories of social determinants of health, land use policies impact on housing, and the unique nuances of rural communities was examined. The need to scrutinize this intersection stems from the recognition of the unique challenges and opportunities facing rural communities in their quest for health equity through equitable housing stock. While urban-centric perspectives often dominate academic and policy discourse, rural areas contend

with distinct socio-economic, infrastructural, and institutional constraints that demand tailored approaches to address the issues and foster inclusive development.

Background

Local authorities control how communities are developed through zoning regulations; these zoning regulations can determine whether communities and their residents thrive, stagnate or decline. State and Federal authority dictates having certain areas available for development, however how these areas are planned is in the control of the local governments (Evenson et al., 2003). When inclusionary housing, such as multi-family units, smaller, affordable lots, and subsidized housing, is planned in correlation to amenities like parks, schools, grocery stores, medical facilities, and industrial/agriculture sites, it positively impacts the community's health equity outcomes. Research supports the future outcomes of youth are based on zip code; proximity to green space, healthy food, medical care and job opportunities matters (*Life Expectancy: Could Where You Live Influence How Long You Live?*, n.d.). Research on health inequities is significant at highlighting location of housing in correlation to health outcomes. Housing is highly correlated to land use policy such as planning and zoning; therefore, health equity must be connected to land use policy. By exploring land use policy and its connection to health equity there is potential for recommended policy changes at federal, state, and local levels that have not been identified to increase health equity outcomes.

There are more federal dollars being spent on health issues than ever before and the U.S still ranks in the bottom half of all industrialized nations for health outcomes (Carter, 2020). Previous work in the field highlights zip codes as better predictors than genetic code for health outcomes (Carter, 2020). The issue comes down to local policy makers and local

government regulations and zoning laws (White, I., Nandedkar, G., 2021). Master plans and zoning regulations provide the framework for a community's layout, therefore being the root of how accessible spaces are to the full community in an equitable fashion (Harris et al., 2019). The purpose of local authorities controlling their planning and zoning regulations is to maintain the vision of their communities through local priorities. For example, an issue within rural communities is the desire to limit development and remain rural. Research addressing the root cause of health inequities through zoning regulations will provide clear policy recommendations on how to reconstruct existing spaces and make health equitable decisions for future community designs.

Health Equity

Health equity, a multifaceted and evolving concept, stands at the intersection of public health, social justice, and healthcare policy. The concept of health equity is consistently described as everyone having the opportunity to attain their highest level of health, regardless of factors such as race, ethnicity, gender, socioeconomic status, education, or geographical location and the with the absence of unfair or avoidable barriers (Baciu et al., 2017; Braveman, 2014; Braveman & Gruskin, 2003; *Health Equity*, n.d.). Health equity as a guiding principle is important for practitioners, but impossible to measure for researchers seeking to identify root causes and generate actionable solutions with measured outcomes. The goal to achieve health equity is widespread, with much supporting research. The World Health Organization and United Nations Children's Fund organized an International Conference on Primary Health Care in Alma-Ata, Kazakhstan, in September 1978 (Hone et al., 2018). The Alma-Ata Declaration was adopted at this conference, including several points with two especially

pivotal in the development of health equity, health equity for all by the year 2000, and recognizing the influence of social determinants on health (Hone et al., 2018).

Research has stemmed from health equity and how to generate measurements from this lofty goal and overall concept. Social determinants of health have been identified as quantifiable and measurable factors that create equitable health outcomes (Baciu et al., 2017; Braveman & Gruskin, 2003; Eberhardt & Pamuk, 2004). Social determinants of health are the circumstances in which people live within and the systems that impact the conditions of their lives (CDC, 2022; *Social Determinants of Health - Healthy People 2030 | Health.Gov*, n.d.). The categories of social determinates of health vary slightly in wording and include education, employment, health services, housing, income, the physical environment, public safety, the social environment, and transportation (Baciu et al., 2017; *Social Determinants of Health - Healthy People 2030 | Health.Gov*, n.d.). Understanding social determinants is crucial because they significantly impact health outcomes and contribute to health inequities. Addressing these determinants involves tackling the root causes of health disparities and promoting policies that create healthier and more equitable living conditions and thus provide measurable factors for determining health equity.

Since 2010 the University of Wisconsin has been collaborating with the Robert Wood Johnson Foundation to provide county level data on health outcomes and health factors that impact the communities' health equity (*County Health Rankings & Roadmaps*, n.d.). The years of data vary by data point as they have evolved over the years. The current 2023 report is broken down into two sections consisting of health outcomes and health factors. Health outcomes include length of life and quality of life. Health factors include health behaviors, clinical care, social and economic factors, and physical environment (*How Healthy Is Your*

County?, n.d.). The data sets collected within the County Health Rankings and Roadmaps datasets align with the social determinants of health and health equity research.

Rural Health Equity

Researching rural health disparity outcomes and identifying solutions for rural health equity has been a separate focus with data sets identifying a gap in premature mortality rates (Eberhardt & Pamuk, 2004; Erwin et al., 2010; Novak et al., 2020). The issue with these research studies attempting to compare the health outcomes for rural areas is a lack of comparable data to urban counterparts. There is a disconnect between what appears to be the obvious geographical difference, while communities show in many areas a strong sense of community, social support, and available health care. There is a significant gap in health equity research in regard to, communities, historically marginalized populations, and societies (Bowleg, 2017). Rural communities would fall into these categories as marginalized and in need of a different approach. Bowleg (2017) makes the case that critical strand theoretical approaches are lacking in health equity research and that innovative solutions for change and implementation will come from increased critical ethnography, observation methods, photo voice, archival analysis, and discourse analysis. The belief is that there is a greater social structural context to health equity than what has been explored and identified.

Health Equity and Housing

Housing is interwoven with the health of the population. Severe housing is a health factor within Americans health rankings with contributing issues to the overall factor being affordability, hazards, and overcrowding (*Explore Severe Housing Problems in the United States | 2022 Annual*, n.d.). Research supports this subset of issues, with consensus around four pathways to health disparities through housing which include stability, affordability, safety,

and the addition of neighborhood (Gibson et al., 2011; Hernández & Swope, 2019; Taylor, 2018). Overall, the research identifies that individuals will suffer negative health outcomes if they are overburdened in cost of housing or must make sacrifices for substandard housing which may include safety issues such as subpar plumbing, lead paint, poor ventilation, etc., or have frequent moves, or live in a subpar neighborhood by environmental or social standards. These concepts were synthesized into a singular impactful statement by Francis Carter, PhD Candidate of Carnegie Mellon, "your zip code is a better predictor of health than your genetic code" (Carter, 2020). Research continues to point towards placement of housing to be more impactful on health outcomes than health education and promotion. This finding is exacerbated for those living rural as this population has been found to have shorter lifespans and higher prevalence of chronic disease (*Life Expectancy: Could Where You Live Influence How Long You Live?*, n.d.).

Existing literature is also abundant in several areas of equity regarding having spaces that allow for individuals with disabilities and reducing health inequity. The concerns of research focusing on equity for individuals with disabilities is the concept of community spaces being equitably accessible by all, to include individuals with disabilities while considering zoning practices that address equity amongst race, ethnicity, and income (Christensen, 2009). Research on health inequities is significant at highlighting location of housing in correlation to health outcomes.

Land Use Policy and Housing Stock

The locations of housing stock make a difference in outcomes for community members, to create equity within a community planning policy and zoning regulations need to reflect equitable placement spaces. Existing research is calling for a change to traditional

zoning codes to a method labeled form-based codes. “Rather than zoning areas by use, form-based codes organize areas into "transect zones," in which each zone is distinguished by the allowable amount of intensity and density as part of a transition from rural to urban” (Tagtachian et al., 2019). There are several types of form-based codes that are trending to produce an alternative to the traditional zoning standards, there are examples in Miami, FL., Nashville, TN., Gulfport, MI., and many others (Tagtachian et al., 2019). A critical point to this research is that changing the coding model alone will not eliminate social inequity, it in fact can have similar outcomes if implemented without specific policies to prevent gentrification, segregation, and other inequities that occur (Tagtachian et al., 2019).

A lack of affordable housing stock has progressed to crisis levels throughout the United States, on a trend that has been building for decades. Research regarding incentivizing subsidized housing and conditions necessary to encourage low-income housing has been in abundance. Research from the Frameworks institute shares strategies on how to discuss housing issues with stakeholders and politicians. It is necessary to clearly define subsidized housing as the stock available to individuals living at or below the poverty level, and affordable housing being the stock available to local median income (Manuel, 2016). Other organizations have also built tool kits for policy makers describing how to build communities and increase housing stock. Influencing policy makers is pertinent because the decision rests with local policy makers and local government regulations and zoning laws (White & Nandedkar, 2021). Master plans and zoning regulations are the framework for a community’s layout, therefore being the root of how accessible spaces are to the full community in an equitable fashion (Harris et al., 2019).

Planning research in the cross sector of equity, injustice, health, or otherwise has a struggle amongst itself in that rural and urban issues are not addressed equally. It is perhaps that rural and urban areas are so drastically different in their ideologies that similar strategies are not executable to achieve similar outcomes. The purpose of local authorities controlling their planning and zoning regulations is for locals to maintain the vision of their communities through local priorities. An issue within rural communities is the desire to limit and remain rural. Max Fraser, an Assistant Professor of American History and Garret Dash Nelson a historical geographer, wrote an article regarding the political divide between rural and urban America and concepts in why rural America continues to hold on to right wing ideals (Fraser & Nelson, 2019). Fraser and Nelson make the case that right wing political ideology is firm within the rural communities based on a fear that the left-wing liberal ideals will modernize and destroy the non-urban rural vision. It is perhaps this strong grasp on right wing policies which limits the additional services and funding that could become available to the more remote and rural areas if political pull was different.

Land Use Policy and Health Equity

Land use policy certainly has a significant impact on the locations of housing and types of housing developments, such as single or multi-family dwellings (Pinto, 2022). Linking together the health equity and housing research, where location of housing and types of neighborhoods have an impact on health outcomes; it is a logical assumption that zoning and planning is a policy option that can be used to create better health outcomes. When low-income housing is grouped together it segregates lower-socio economic status families which creates subpar neighborhoods which is directly related to health outcomes (Sallis et al., 2009). There are numerous federal and state funding sources that vary throughout the Unites States

that encourage the development of low-income and affordable housing units. Research points to barriers that prevent low-income developments are within local land use and development policies due to density restrictions or other types of requirements that make the basic development of housing more expensive for the developer so there is no profit left even with the low-income incentives (McFarlane et al., 2021). Affordability is one of the pathways identified as a housing issue that impacts health equity. Affordability is so intertwined with zoning regulations that the Biden administration has proposed grants to local communities that will lessen their zoning regulations and allow for increased density to increase affordable housing stock (Badger & Washington, 2022). Weaving the varying research findings together, a critical component of creating future low-income housing is to have it throughout the community, not separate from any other market value housing.

In addition to the affordability link between land use policy, housing prices, and health equity outcomes, there is also the environment pathway. Housing placement is a direct outcome from land use planning and policy. Particularly for rural areas, there is greater distance to services, greater gaps in transportation, less developed walking spaces and recreational areas, all making health outcomes worse through place making in the zoning and planning process (Dankwa-Mullan & Pérez-Stable, 2016; Zhang et al., 2020). The place making approach for health equity is critical from a greater perspective in land use planning to ensure that housing and community spaces aren't at risk for exposure to sewage, trash, pests, hazardous waste, or any other environmental health impact (Corburn, 2004). Ensuring the greater health impact for the entire community will require collaboration between the two professional sectors, both public health professionals and planning professionals working together (Corburn, 2004).

Regional Approach

Another perspective on equitable communities is the regional approach concept, which alleviates any one specific local authority to equity expectations but aligns itself to a collaborative effort. The idea of regionalism is not new, community development regionalism has been a part of research for decades (Pastor et al., 2010; Smith, 2013). However, the movement slowed in momentum as different cross sectors compete for priorities such as environmentalism, economic and racial equality, and industry growth (Pastor et al., 2010). While a regional approach shows potential for applying equity to community planning, the Smith article identified the lack of legal teeth for a regional approach; the authority over a region can be widely disbursed and the movement relies on stakeholders' commitment to equity as a priority (Smith, 2013). Smith calls for additional research on regional economics and governance structures (Smith, 2013).

Summary

Research concludes that local planning and zoning is at the root of health equity issues. Much research has been dedicated to efforts to change zoning regulations, and to encourage political movements necessary to make high level change. Barriers must be overcome, such as privatized community development and competing demands at local levels throughout the United States. Research has also been conducted on how to recognize equity in spaces, and a variety of different attempts of measurements to assess and provide insight to action. An in-depth qualitative analysis of what local zoning regulations exist with correlated health equity outcomes is lacking from existing research. The potential for research lies within identifying a health equity measurement scale, applying that to specific locations, and conducting a review of those specific regulations.

Chapter 3: Data and Methods

In the pursuit of unraveling the intricate relationship between health equity and land use policy, this dissertation endeavors to employ data collection methodologies and analytical frameworks to correlate he multifaceted dynamics at play. This chapter serves as a roadmap, outlining the data sources, research design, and analytical techniques employed to investigate the research questions and objectives outlined in Chapter 1.

The overarching aim of this chapter is to provide transparency and clarity regarding the methods utilized in the study, ensuring the reliability, validity, and reproducibility of the findings. By delineating the data collection procedures, sampling strategies, and analytical approaches, this chapter offers insights into the systematic process undertaken to generate empirical evidence and draw meaningful conclusions regarding the intersection of health equity and land use policy.

Overview

This is a qualitative study utilizing publicly available data sets and information to examine the correlation between land use regulations and health equity in rural U.S counties. Using a collective case study approach, the data collected was used to generate eight profiles for eight different counties, four identified as a health equitable and four identified as not health equitable. For this study, the focus is on county level data, as this is the smallest level of government that has consistent data across the topic areas and has the policy control over land use. Health equity and land use regulations are complex and comprehensive topics. For this study having clear definitions of rural and health equity is critical for the study's future relevance and understanding the outcomes and findings.

While the census is the technical definition of rural by population, it is also noted that rural is also considered a lifestyle and an internal belief of what a physical space should look

like. The U.S Census Bureau defines an urban area as any defined area (city, county, township, etc.) with a population greater than 50,000, rural is defined as anything that is not urban. The U.S Census Bureau is not clear and concise. Interestingly, the history of the census population data shows that most rural areas cluster near urban areas. Simply, population size is what determines rural or urban. Within one county there can be some rural and some urban areas (*Rural America*, n.d.). There are varying degrees of rural when you consider the population density. Another critical aspect to consider when attempting to define rural is the eligibility factors from administrative agencies, and this number has changed over the years. For the United States Department of Housing and Urban Development (HUD) a rural county is not just a census delineation (less than 50k in population) but also, has 75% of its population less than urban, in a state with less than 30 persons per square mile in population density (*FY 2023 CoC Program Competition*, n.d.).What this means is for a county that has over 50,000 in population but has other municipalities and townships within its boundaries, 75% must meet the rural population criteria and the overall state of which the county is located has to have less than 30 persons per square mile. For the purpose of this study, counties were selected using the most restrictive definition of rural by combining the census delineation and the HUD requirements, a county with 75% or more of its population in a rural area in a state with a population density as close to 30 or less persons per square mile.

Health equity has numerous factors to consider, and it is in relation to other spaces as there is no clear goal for each of the factors to reach. The World Health Organization attempts to define health equity with qualities such as there being no disparities or unfair differences in health outcomes, access to healthcare, or the social determinants of health based on factors such as race, ethnicity, socioeconomic status, gender, age, disability, or geographic location (*Health*

Equity, n.d.). The University of Wisconsin has been collaborating with the Robert Wood Johnson Foundation since 2010 to culminate data around factors and outcomes that are correlated to health equity (*County Health Rankings & Roadmaps*, n.d.). The data sets within the County Healthy Rankings and Roadmaps aligns with the World Health Organizations understanding of health equity looking at physical environment, social and economic factors, clinical care, health behaviors, quality of life, and length of life (*How Healthy Is Your County?*, n.d.). This data was used to identify case selection and then further reviewed for cross comparable items for outcomes.

As derived from the literature review there are no cookie cutter plans for land use regulations. There are several overarching types, and tools and options within each, and some areas will piece meal or select definitions, tools, and options from a variety of different paradigms. For this reason, land use was the independent variable, not used to identify the case counties but explored as a contributing factor to how the selected counties health equity may or may not align with certain types of land use policies.

Research Questions

This research seeks to identify if there are land use policies that align with health equitable communities within rural America. It is believed that there are types of land use policy used in the counties that are identified as health equitable that are different than those in unequitable counties, with some cross over of others as well. The research regarding health equity and land use is intricately tied to housing equity. Therefore, it is also important to identify if the counties selected in this collective case study have equitable housing as a cofounding factor, with the subsequent research question asking if health equitable communities within rural America have equity in housing stock.

The dissertation is guided by two main research questions:

1. Are there land use policies that align with health equitable communities within rural America?
2. Do health equitable communities within rural America have equity in housing stock?

These questions are designed to explore the connections between land use policy, housing equity, and health outcomes in rural American contexts.

Methods

A qualitative collective case study is the approach being used to frame this research inquiry. A collective case study design involves studying multiple cases (rural communities) to understand a common phenomenon (land use policies and health equity) across diverse contexts (Creswell & Poth, 2016). Collective case studies allow for the researcher to draw conclusions through comparison (Creswell & Poth, 2016). By ensuring there are multiple cases reviewed and compared the findings can be generalized and be more broadly applicable.

Literature supports a history of exclusionary zoning that had led to racial inequities and socio-economic inequities. Health inequities have been explored from a health perspective, with research showing that zip codes are more closely tied to health outcomes than genetics, however this correlation to land use policy is lacking. Based on the literature it is believed that there are political factors involved, state statutes, and individual knowledge and philosophy of local planners and officials. However, this study is limited to themes and codes identified in publicly available documents and construing political factors and local philosophy is not feasible through these documents. Health professionals are rarely involved with land use policy and that gap in connectivity is believed to be a factor as to why housing placement is not considered regularly.

There is a widespread understanding of industrial and residential type zones not being side by side due to environmental health factors. However, these gaps of knowledge are inferred based on available literature and practitioners may have a different level of understanding.

The theoretical framework driving this study is critical postmodernism, with some ethnographic qualities, particularly from a historical perspective. Critical postmodernism as the driving theoretical approach, it aligns with the belief that policy makers are oppressing parts of the population based on minority status and/or socio-economic class (Hesse-Biber, 2016). Particularly within the concept of preserving the idealistic rural vision and lifestyle and land use impacts on health, postmodernism offers explanation as to why some may "consent to their own oppression" because the rural ideal has become accepted as critical to maintain (Hesse-Biber, 2016, p.28). As noted by Marshall and Rossman (2011), critical ethnography can "ask questions about the historical forces shaping societal patterns as well as the fundamental issues and dilemmas of policy, power, and dominance in institutions, including their role in reproducing and reinforcing inequities" (Marshal & Rossman, 2011).

This is where a truly critical ethnographic methodology could delve into the understanding and desires of the individuals living within the rural communities. However, due to time and financial constraints a true critical ethnographic method is not feasible. Critical ethnography, while the base of the research comes from participant interaction, it also can rely on secondary interactions or observations such as surveys and interviews conducted by someone else (Troman et al., 2005). This research utilized community level collected data from community health improvement plans, community needs assessments, and Comprehensive County plans which typically includes survey data of community members. Ethnographic methods include document analysis and visual methods as well, which includes review of land

use and zoning policies and maps to identify visual spacing as well as google earth and other mapping available to review distance of health centers from the population being investigated. Most land use policies and regulations that have created the existing environments and used to create new developments have been in place for a period of time. Master plans and land use regulations can change but this is dependent on the political regime in power at the time and their vision for the community.

Case Selection

A purposeful sampling strategy was used to select eight rural counties across the United States. Narrowing down the states within each region that have a population density of thirty or less would exclude the Northeast and Southern regions of the United States. To be inclusive of these regions, the states within those regions with the smallest population density was chosen. This leads to the Northeast region being Maine, the Midwest region being South Dakota, the Southern region being Oklahoma, and the West region being Montana. Of these states the county health rankings were reviewed, this process included listing out the rural county percentages of the above states and the health outcomes rankings and the health factors rankings as measured in the University of Wisconsin's County Health Rankings and Roadmaps data of 2023.

Social determinants of health have been identified as quantifiable and measurable factors that create equitable health outcomes (Baciu et al., 2017; Braveman & Gruskin, 2003; Eberhardt & Pamuk, 2004). The data sets collected within the University of Wisconsin's County Health Rankings and Roadmaps datasets align with the social determinants of health and health equity research (*How Healthy Is Your County?*, n.d.). The County Health Rankings and Roadmaps data are divided and ranked in two overarching areas, Health Outcomes and Health Factors. These are further defined in the data sources section.

Not all counties that ranked high or low in outcomes ranked the same in health factors. Counties that were consistent at the top of the rankings with a rural percentage of 75% or greater were chosen. If there were two similarly ranked counties with 100% rural designation, the county with the higher population was chosen. Through this process the rural counties that were ranked highest were:

- Sagadahoc County, Maine
- Edmunds County, South Dakota
- Alfalfa County, Oklahoma
- Jefferson County, Montana

Of these states the rural counties with the lowest rankings were:

- Washington County, Maine
- Roberts County, South Dakota
- Adair County, Oklahoma
- Glacier County, Montana

Data Sources

For each case, a comprehensive health equity and land use regulation profile was developed using publicly available data and information. The most current census profile was used for each county to gain rural identification, population size, and other general demographic information to aid in understanding the county. The health equity data relied on the quantitative data collected by the University of Wisconsin and their analysis which includes:

Table 3.1

County Health Equity Data Collected by Health Outcomes

Health Outcomes	Data Collected	Data Source	Year
Length of Life	Premature Death data	National Center for Health Statistics (NCHS)	2018-2020
Quality of Life	Poor or Fair Health	Behavioral Risk Factor Surveillance System (BRFSS)	2020
	Poor Physical Health Days	Behavioral Risk Factor Surveillance System (BRFSS)	2020
	Poor Mental Health Days	Behavioral Risk Factor Surveillance System (BRFSS)	2020
	Low Birthweight	National Center for Health Statistics (NCHS)	2014-2020

Note. (*County Health Rankings & Roadmaps*, n.d.)

Table 3.1 shows the health outcome categories identified by the County Health Rankings and Roadmaps. This data is publicly available data sets from the Behavioral Risk Factor Surveillance System and the National Center for Health Statistics. These sets of data are used to rank counties health equity in conjunction with the following health factors which is split into four categories: health behaviors (table 3.2), clinical care (table 3.3), social and economic factors (table 3.4), and physical environment (table 3.5).

Table 3.2

County Health Equity Data Collected by Health Factors, Health Behaviors

Health Factors	Data Collected	Data Source	Year
Health Behaviors			
Tobacco Use	Adult Smoking	Behavioral Risk Factor Surveillance System (BRFSS)	2020
Diet and Exercise	Adult Obesity	Behavioral Risk Factor Surveillance System (BRFSS)	2020
	Food Environment Index	USDA Food Environment Atlas; Map the Meal Gap from Feeding America	2019 & 2020
	Physical Inactivity	Behavioral Risk Factor Surveillance System (BRFSS)	2020
	Access to Exercise Opportunities	ArcGIS Business Analyst and Living Atlas of the World; YMCA; US Census TIGER/Line Shapefiles	2022 & 2020
Alcohol and Drug Use	Excessive Drinking	Behavioral Risk Factor Surveillance System (BRFSS)	2020
	Alcohol-Impaired Driving Deaths	Fatality Analysis Reporting System	2016-2020
Sexual Activity	Sexually Transmitted Infections	National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention	2020
	Teen Births	National Center for Health Statistics (NCHS)	2014-2020

Note. (*County Health Rankings & Roadmaps*, n.d.)

Table 3.2 shows the health behaviors and their data sources that are used to rank counties by overall health equity. These behaviors could be influenced by a variety of different factors of a built environment such as access to open spaces or recreation for exercise, or access to health foods if communities are considered food deserts and have not local grocery stores.

Table 3.3

County Health Equity Data Collected by Health Factors, Clinical Care

Health Factors	Data Collected	Data Source	Year
Clinical Care			
Access to Care	Uninsured	Small Area Health Insurance Estimates	2020
	Primary Care Physicians	Area Health Resource File/American Medical Association	2020
	Dentists	Area Health Resource File/ National Provider Identifier Downloadable File	2021
	Mental Health Providers	CMS, National Provider Identification	2022
Quality of Care	Preventable Hospital Stays	Mapping Medicare Disparities Tool	2020
	Mammography Screening	Mapping Medicare Disparities Tool	2020
	Flu Vaccinations	Mapping Medicare Disparities Tool	2020

Note. (*County Health Rankings & Roadmaps*, n.d.)

Similarly to table 3.2, table 3.3 shows additional health factors focusing on clinical care. These factors could also be impacted by the built environment regarding distance to care and how communities are developed to attract a well-rounded workforce.

Table 3.4

County Health Equity Data Collected by Health Factors, Social and Economic Factors

Health Factors	Data Collected	Data Source	Year
Social and Economic Factors			
Education	High School Completion	American Community Survey (ACS) 5-year estimates	2017-2021
	Some College	American Community Survey (ACS) 5-year estimates	2017-2021
Employment	Unemployment	Bureau of Labor Statistics	2021
Income	Children in Poverty	Small Area Income and Poverty Estimates	2021
	Income Inequality	American Community Survey (ACS) 5-year estimates	2017-2021
Family and Social Support	Children in Single-Parent Households	American Community Survey (ACS) 5-year estimates	2017-2021
	Social Associations	County Business Patterns	2020
Community Safety	Injury Deaths	National Center for Health Statistics (NCHS)	2016-2020

Note. (*County Health Rankings & Roadmaps*, n.d.)

Table 3.4 shows the health factors that are related to social and economic topics. These factors are more influenced by school systems, sense of community, and community development in the sense that well-paying jobs are within a commutable distance and available for the population's skill sets. Alternately, that the education systems are set up in a way that the population develops the skills for the available career paths.

Table 3.5

County Health Equity Data Collected by Health Factors, Physical Environment

Health Factors	Data Collected	Data Source	Year
Physical Environment			
Air and Water Quality	Air Pollution	Environmental Public Health Tracking Network	2019
	Drinking Water Violations	Safe Drinking Water Information System	2021
Housing and Transit	Severe Housing Problems	Comprehensive Housing Affordability Strategy (CHAS) data	2015-2019
	Driving Alone to Work	American Community Survey (ACS) 5-year estimates	2017-2021
	Long Commute	American Community Survey (ACS) 5-year estimates	2017-2021

Note. (*County Health Rankings & Roadmaps*, n.d.)

Table 3.5 is focused on the health factors within the physical environment, these are directly correlated to industry and how air, water, and transit systems are operating to ensure the safety of the neighboring populations. Additionally, this includes the safety of and affordability of available housing.

The additional health equity and land use data collected varies slightly by location due to differences in State laws and implementation of core concepts. Each area has something similar to a comprehensive or master plan, zoning regulations or codes. Each area equally has community health improvement plans (CHIP) and/or community health needs assessments (CHNA), however titles and specifics vary by area. With such variation by area the specific data sources are defined by topic and area.

Health Equity Data Sources

For health equity the full county health rankings include both outcomes and factors as listed above. Accreditation requires non-profit hospitals to conduct a community health needs

assessment and community health improvement plans every three years (Pennel et al., 2015). Local area health authority and/or provider CHNA and/or CHIP data was collected, reviewed, and analyzed as well as the geographical location of the closest hospital and general practitioners to different areas of the county using google maps.

Counties in the State of Maine.

In Maine, the critical access non-profit hospitals are a part of an integrated health network, as well as State level public health and prevention. The State of Maines State Health Improvement Plan has individual sections dedicated to each county. The state also provides for individual county health profiles, the 2021 document for Sagadahoc and Washington County were used. These documents were analyzed for themes and analysis to the health equity data of both Sagadahoc County and Washington County.

Sagadahoc County, Maine

The hospital that is responsible for the community needs assessment and health improvement plan of Sagadahoc County is a apart of an integrate health system known as MaineHealth, this health system operates the Mid Coast Hospital (*Community Health Needs Assessment | MaineHealth*, n.d.). This hospital is in the adjacent town Brunswick, ME which is located in a different county Cumberland, County, ME (*Brunswick · Brunswick, ME 04011*, n.d.). Cumberland County is the most populous county in the State of Maine. Some of the MaineHealth, Mid Coast Hospital affiliates and specialists such as a cancer center, rheumatologist, podiatrist, and more are located in Bath, the county seat of Sagadahoc (*Search Locations | MaineHealth*, n.d.). For some Sagadahoc residents it may geographically be closer to utilize other hospitals such as an urgent care in Lincoln, or a St. Mary Hospital in Lewiston, ME, depending on which area of Sagadahoc they reside. However, despite the varying locations of

health surrounding Sagadahoc County, the hospital responsible for the data collection via the CHNA and CHIP which were the documents reviewed and used for thematic and coding analysis.

Washington County, Maine

Washington County, Maine, is served by two critical access hospitals, Down East Community Hospital located in the town of Machias and Calais Hospital, in the town of Calias which became a subsidiary of Down East Community Hospital in 2020 (*Down East Community Hospital Acquires Calais Regional Hospital – Down East Community Hospital*, n.d.). Each of these hospitals share the same CHNA for the county of Washington but have two different CHIP's. The singular CHNA and both CHIP's were used for thematic analysis and coding.

Counties in the State of South Dakota.

The State of South Dakota has a State Health Department, and they have conducted a statewide primary care needs assessment that includes the rural counties as well as a state health assessment. South Dakota has a significant Native American population and has an extensive tribal hospital network, these health entities, and counties only with tribal health were excluded from this study. Both state department of health documents were used for thematic and coding analysis.

Edmunds County, South Dakota

Edmunds county is 1,151 square miles with just over 4,000 residents with one critical access hospital located within its boundaries that is also a top-rated trauma center located in the town of Bowdle. Bowdle Health Center serves as the hospital, long term care facility, the ambulance service, and public health which includes homemaker services, Women, Infants, and Children (WIC) program and immunizations. Additionally, within the county in the town of

Ipswich there is also a Sanford Medical Center which is part of an integrated health system and offers a family medicine practice.

Roberts County, South Dakota

Roberts county is 1,101 square miles with approximately 10,000 residents, this county has two hospitals located near each other in distance. One hospital is a critical access hospital, and the other is a tribal hospital. The critical access hospital is a part of the Coteau de Prairies integrated health system with four locations. This hospital conducted the community health needs assessment in 2021 and this document was used for thematic and coding analysis.

Counties in the State of Oklahoma.

The State of Oklahoma requires counties to have a Board of Health, these Boards of Health may create a health department (*Oklahoma Statutes Title 63. Public Health and Safety*, n.d.). All but seven counties have a health department, these seven counties then have a County Superintendent of Health, these counties without an independent health department may create a cooperative health department with another county health department or join a health district (*County Map*, n.d.; *Oklahoma Statutes Title 63. Public Health and Safety*, n.d.). The State of Oklahoma's Health Department has a health improvement plan and an annual report. Both documents were used for thematic analysis and coding.

Alfalfa County, Oklahoma

Alfalfa County is one of the seven counties in the State of Oklahoma without an independent County Health Department. Garfield County serves as their regional county health department and has a community health needs assessment, however there is no mention of Alfalfa County and has no demographic data for Alfalfa County included. Alfalfa has a Great Salt Plains (GSP) medical center, which is an integrated network with multiple locations. GSP

offers medical, dental, and behavioral health services and can manage acute issues, however, is not an emergency room and is not open 24/7. GSP is a non-profit clinic and required to complete a community health needs assessment, theirs covers Alfalfa and Garfield counties. In the neighboring County of Major, there is Fairfield Regional Medical Center with a 24/7 emergency room. Their Community Health Needs Assessment includes in their secondary service area the lower portion of Alfalfa County. Both GSP's and Fairfield Regional's documents were used for thematic analysis and coding.

Adair County, Oklahoma

Adair County, Oklahoma has an independent Health Department offering extensive services. There is also a 24/7 hospital located within Adair County, Stilwell Memorial Hospital, which is a non-profit and should have a Community Health Needs Assessment on file. Unfortunately, it was not available on their website, and they did not respond to a request for the document.

Counties in the State of Montana.

Counties in the State of Montana are required by state laws to maintain a local board of health (*Montana County Government Overview*, n.d.). The State of Montana's Health and Human Services Department has a State Health Needs Assessment and five-year State Health Improvement Plan. Within this document they identify county level needs in grouping and while Jefferson County meets census and HUD definitions of rural, Oklahoma identifies Jefferson County as a micropolitan area and Glacier County as a rural county. Both documents were used for thematic analysis and coding.

Jefferson County, Montana

There are no emergency hospitals within Jefferson County, the closest hospital, St. Peters Health, is just north of the county in Lewis and Clark County. This hospital's Community Health Needs Assessment, and Community Health Improvement Strategy includes Jefferson County, as well as others, and lumps them in together as "other counties" within the report. Jefferson County Health Department also has a Community Health Improvement Plan. These documents were used for thematic analysis and coding.

Glacier County, Montana

Glacier County has several emergency service type facilities but not all are 24/7, they do have one full-service hospital, Logan Cut-Health, which is a part of a larger integrated system of Logan Health that has coverage throughout most of Montana. Logan Health as a Community Health Needs Assessment and Health Improvement Plan specifically for Glacier County. The County Health Department is small in structure and without a CHNA. The hospital's documents were used for thematic analysis and coding.

Land Use Data Sources

For land use regulations public records of current county laws (ordinances, codes, etc.) relating to land use and community development were collected, reviewed, and analyzed.

Counties in the State of Maine.

The State of Maine has a municipal home rule which grants substantial authority to the lowest level of local government. This means that local communities have a significant degree of autonomy in making decisions related to land use, as long as their actions do not conflict with state law (*Title 30-A, §4312: Statement of Findings, Purpose and Goals*, n.d.). Chapter 30 of Maine State Legislature outlines the state laws regarding planning and land use, this was saved

from the Maine Legislature website as a pdf and used for thematic analysis and coding. Additionally, for the unorganized parts of Maine, the State has created a Maine Land Use Planning Commission which has its own Land Use Planning Standards, Comprehensive Land Use Plan, and Guidance to understanding the Comprehensive Land Use Plan document (CLUP). All three of these documents were used for thematic analysis and coding to understand and capture the overall State of Maines land use policies correlation to health equity.

Sagadahoc County, Maine

Given that authority is given to the lowest level of local government, the County of Sagadahoc overall does not have a comprehensive plan document or any land use or planning authority. The areas within Sagadahoc County that are large enough to be townships with a Select Board have land use policy and CLUP's. Select Boards are the grants the highest level of executive power and administrative functions within towns of Maine (*Title 30-A, §2635: Select Board to Act as a Body; Administrative Service to Be Performed through Town Manager; Committees*, n.d.). The following are the Sagadahoc County towns and the correlating land use documents utilized for thematic and coding analysis:

Table 3.6

Sagadahoc County, Maine: Township Planning Documents

Township	Documents Collected
Arrowsic	Comprehensive Plan, Zoning Ordinance, Subdivision Ordinance, Zoning Map
Bath	Comprehensive Plan
Bowdoinham	Comprehensive Plan, Amended Land Use Ordinance
Georgetown	Shoreland zoning Maps, Property Maps
Phippsburg	Comprehensive Plan, Land Use Ordinance, Shoreland Zoning Ordinance, Subdivision Ordinance, Town Lands Management Ordinance
Richmond	Comprehensive Plan, Land Use Designation Map
Topsham	Zoning Ordinance, Zoning Map
West Bath	Comprehensive Plan, Land Use Ordinance
Woolwich	Planning Ordinance

This list does not include Bowdoin, as they do not have a land use document, and Swan Island, the only unorganized area of Sagadahoc County which would fall under the State of Maine's Planning Commission documents.

Washington County, Maine

The following are the Sagadahoc County towns and the correlating land use documents utilized for thematic and coding analysis:

Table 3.7

Washington County, Maine: Township Planning Documents

Township	Documents Collected
Addison	Comprehensive Plan, Land Use Ordinance
Alexander	Comprehensive Plan, Building and Property Maintenance Ordinance, Zoning Map
Baileyville	Land Use Ordinance, Zoning Map
Beddington	Comprehensive Plan, Land Use Ordinance, Shoreland Zoning Ordinance
Cherryfield	Comprehensive Plan, Land Use Ordinance, Shoreland Zoning Map, Shoreland Zoning Ordinance
Cooper	Comprehensive Plan, Shoreland Zoning Ordinance, Composite Map
Cutler	Land Use Ordinance, Shoreland Zoning Ordinance, Shoreland Zoning Map
Danforth	Shoreland Zoning Ordinance
Harrington	Land Use Ordinance, Shoreland Zoning Ordinance
Jonesport	Comprehensive Plan, Land Use Ordinance, Subdivision Ordinance, Shoreland Zoning Ordinance
Lubec	Comprehensive Plan, Shoreland Zoning Ordinance
Machias	Comprehensive Plan, Trailer/Mobile Home Ordinance
Machiasport	Comprehensive Plan, Subdivision Ordinance, Shoreland Zoning Ordinance, Trailer/Mobile Home Ordinance, Zoning Map
Northfield	Shoreland Zoning Ordinance
Pembroke	Building Permit Ordinance
Perry	Subdivision Ordinance, Shoreland Zoning Ordinance
Robbinston	Zoning Ordinance, Shoreland Zoning Ordinance, Subdivision Ordinance
Steuben	Building Ordinance, Shoreland Zoning Ordinance
Whiting	Shoreland Zoning Ordinance

This list does not include the organized townships of : Beals, Charlotte, Columbia Falls, Crawford, Deblois, Dennysville, East Machias, Jonesboro, Marshfield, Meddybemps, Milbridge, Princeton, Roque Bluffs, Talmadge, Topsfield, Vanceboro, Waite, Wesley, Whitneyville, as these townships either did not have a land use document or did not respond to the records request and are without a website or other online access point. There are also thirty-four townships that are unorganized in this county and therefore follow the State of Maine's Planning Commission documents.

Counties in the State of South Dakota.

The State of South Dakota gives authority to the county level to decide on zoning and land use (*Codified Law 11-2*, n.d.). The statutes use enabling language saying that counties "may" create planning commissions, create comprehensive plans, plan regionally with neighboring counties and commissions, and create zoning ordinances. Essentially not requiring the counties to do these activities, however South Dakota is a dillions rule state, which means the state has ultimate authority and must expressly grant authority to lower levels of government (South Dakota, County Government Overview, n.d.).

Edmunds County, South Dakota

Edmunds County has elected a planning commission and through the planning commission approved a zoning ordinance as recent as July of 2022. This document as well as a comprehensive plan dated April of 2022 were saved from the Edmunds County website and used for thematic and coding analysis.

Roberts County, South Dakota

Roberts County does not have a planning commission, all land use business is agendized with the Board of County Commissioners. There is a zoning ordinance that was adopted in 2021 and this document was used for thematic and coding analysis.

Counties in the State of Oklahoma.

Oklahoma State is a dillions rule state which requires the state to expressly grant the authority for land use and zoning to the lower levels of government (*Oklahoma County Government Overview*, n.d.). The State of Oklahoma reserves the right to make zoning decisions on utility structures, and uses enabling language for counties to have zoning and land use ordinances as their commissions see appropriate (*Oklahoma County Government Overview*, n.d.; *Oklahoma Statutes Title 11. Cities and Towns*, n.d.). Oklahoma State Statute Title 11 describes the zoning rights to counties and reservations to the state. This document was downloaded and used for thematic and coding analysis.

Alfalfa County, Oklahoma

Alfalfa County does not have a zoning or land use ordinance or regulatory document of any sort. This was confirmed from commission meeting agenda minutes from March of 2021 (*Alfalfa County Commissioners Meeting Minutes*, 2021). With no documents or zoning and land use policy in this county, there was nothing to contribute to the thematic analysis and coding.

Adair County, Oklahoma

Adair County does not have a zoning or land use ordinance or regulatory document of any sort, similar to Alfalfa County. This was confirmed by a response for the current County Clerk of Adair via email on December 11, 2023. With no documents or zoning and land use policy in this county there was nothing to contribute to the thematic analysis and coding.

Counties in the State of Montana.

The State of Montana gives authority to counties to regulate land use and implement zoning regulations. Originally there was a stipulation that counties wishing to take authority of their land use must have a growth plan in place, however this was amended to be optional in the early 2000's (*Mmoh_chapter 8 - Local Government Center | Montana State University*, n.d.). The State of Montana does have an extensive land use statute and this legislation was used for thematic analysis and coding.

Jefferson County, Montana

Jefferson County has a growth plan and zoning regulations. Both documents were used for thematic analysis and coding.

Glacier County, Montana

Glacier County has a large section of it dedicated to a National Park. This area had a tourism board, but the county does not currently have a planning board, or growth plan, or land use policies of any sort for their county, therefore the planning reverts to the State authority.

Data Analysis

Document analysis, archival records, and direct observation of maps are the instruments utilized in this study. The documents collected were organized by category (health equity or land use policy) and by county with the purpose of creating individual county profiles. Each document was reviewed, and a document memo was created to summarize themes, develop coding categories, and identify cross document comparisons. Documents were also stored within the Atlas coding software for keyword, thematic, and visual analysis. This procedure was done for each document by category, by county.

There is internal validity to the study with multiple documents collected from different sources for health equity and the land use policy triangulated with the observable spaces using maps and google earth imaging. The maps and google earth imaging will allow for validation of the built environments impact on health as described by any community needs assessments or health equity data. The study is reliable in that the procedures were duplicated eight times to generate a repeatable profile of each case and then cross analyzed for external validation of findings. The process of memoing, peer review, and detailed descriptions of how the data was analyzed ensure that the researchers bias is not influencing the findings of this study.

Limitations

Limitations to this research include the lack of a consistent definition for health equity. This study is building on the concept that health equity is measured by social determinants of health, however this some research identified in the literature review that believes this type of measurement furthers the disconnect to finding solutions that reduce the equity gap. This study relied upon existing data collected at the local level, there is the possibility that the local level data was not collected in a fashion that represents the full community perspective. The correlative factors to zoning regulations are piece of the vast concepts that contribute to a health equitable community; therefore, this research will identify possible factors that are related to the cross sector of these two topics. However, the correlational relationship is not able to be identified and how to fully build health equitable communities will not be identified through this research. Zoning regulations do contribute to the built the environment and research has proven where individuals live matter regarding health outcomes. This research will provide another link to the concepts and provide a baseline to encourage health equity and the built environment to move forward together.

Additional limitations to this study include not having ranked the states in correlation to health equity. There is a possibility that state level policy is also at play in ensuring health equitable land use policy exists at the lower levels of government. This study also does not include a review of American Indian land reservations and their specific housing issues.

Data Analysis

Qualitative data software ATLAS.ti (*ATLAS.Ti | The #1 Software for Qualitative Data Analysis,* n.d.)was used to code documents grouped by health equity ranking (high or low) and type of document (health or land use). Initially coding was conducted manually, and then a secondary coding took place ensuring consistency of codes applied across all documents. Additionally, keyword and phrase searches were conducted across all documents to ensure a thorough review and application of codes was conducted. ATLAS.ti generates coding charts based on document grouping using total number of code instances, the software can also conduct opinion mining based on document groups, as well as extracting concepts. All available software analysis tools were utilized to identify results.

Summary

This qualitative research study employs a collective case study methodology underpinned by critical theory to investigate the influence of land use policies on health equity in rural American counties. The research aims to identify the presence and impact of land use policies on health equity outcomes within these counties. To achieve this, publicly available datasets from the University of Wisconsin's County Health Rankings and Roadmaps, along with local area community health needs assessments, are utilized to assess the health equity status within each

county. These datasets serve as valuable indicators for understanding the health disparities and needs of the population.

In addition, local codes, plans, and meeting minutes are analyzed to ascertain the landscape of land use policies within each county's jurisdiction. This involves a thorough examination of local regulatory frameworks, planning documents, and official records to identify the range of land use policies in place. Furthermore, observation of maps and Google Earth images supplements the analysis by providing visual insights into the spatial distribution and characteristics of land use within the study areas. This observational approach enhances the understanding of how land use policies manifest on the ground and their potential implications for health equity.

By employing a multifaceted approach combining qualitative data sources, critical theoretical perspectives, and observational methods, this study seeks to uncover the intricate relationship between land use policies and health equity in rural America. The synthesis of these data sets and methodologies offers a comprehensive understanding of the contextual factors shaping health outcomes and informs potential interventions to promote greater equity within these communities.

Chapter 4: Results

This chapter presents the findings of a qualitative case study that scrutinizes eight counties across four states, aiming to explore the intersection of land use policies and the promotion of health equitable communities within rural America. Drawing upon a meticulous analysis of ninety-six documents, including policy documents, reports, and community plans, this study endeavors to answer the central research question: Are there land use policies that align with fostering health equitable communities within rural America? By delving into the unique characteristics and policy landscapes of each county, this chapter elucidates the complexities inherent in addressing health equity in rural contexts. Through thematic coding and in-depth analysis, the following sections offer insights into the diverse approaches taken by rural communities towards land use policies and their potential impact on health outcomes. This examination not only sheds light on the existing policy frameworks but also identifies opportunities for enhancing the alignment between land use policies and the pursuit of health equity in rural America.

The instruments used in this study were the publicly available census data, land use policy documents and community health documents. The table below shows the documents that were publicly available by county and their health equity ranking (high or low).

Table 4.1

Document Type Collected by County and Health Ranking

	Maine		Montana		Oklahoma		South Dakota	
	Sagadahoc County	Washington County	Jefferson County	Glacier County	Alfalfa County	Adair County	Edmunds County	Roberts County
Health Equity Ranking	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**
Health Documents								
Current Community Health Needs Assessment	X	X	X	X	X		X	X
Current Community Health Improvement Plan	X	X	X	X	X			
Health Profile	X	X				X		
Land Use Documents								
Zoning Policy/Regulation (Last 10 years)	7	15				2		1
Zoning Policy/Regulation Older than 10 years	4	16				2	1	
Comprehensive Community Plan (Last 10 Years)	1	3					1	
Comprehensive Community Plan (Older than 10 Years)	3	6						
Capital Improvements Plan (Last 10 years)			1	1				
Default to State Planning			1	1	1	1		

There is no trending analysis for the documents available based on health equity ranking. It is not surprising that a low health equity county did not have a current Community Health Needs Assessment or Health Improvement Plan, however that was not consistent across all four low ranking counties. The state of Main gives land use authority to the lowest possible government, the number of townships within each county are the cause for the exceptionally

high number of land use documents from the counties in Maine. These documents were extremely close in format, composition, and information.

Demographics

The following two charts show the general demographic information, the first by county and health ranking and the second an average of the high health equity cohort and the average of the low health equity cohort. This data was pulled from the US Census Bureau data tables using the American Community Survey, Demographic and Housing Estimates from 2022.

Table 4.2

Census Demographic Data by County and Health Equity Ranking

	Maine		**Montana**		**Oklahoma**		**South Dakota**	
	Sagadahoc County	**Washington County**	**Jefferson County**	**Glacier County**	**Alfalfa County**	**Adair County**	**Edmunds County**	**Roberts County**
Health Equity Ranking	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**
Rural %	**75%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Population total	36,868	31,096	12,273	13,781	5,683	19,726	4,014	10,242
Median Age	46.7	48.6	47.4	34.2	43.6	38.1	43.7	37
Under 18 %	18.30%	18.80%	20.10%	29.50%	19.70%	26.50%	23.10%	28.80%
65 and over %	23.40%	25.30%	22.40%	12.40%	18.90%	15.60%	21.40%	19.90%
Poverty %	10.90%	17.50%	5.10%	29.40%	11.80%	22.30%	7.30%	20.80%
Housing Units (Total)	18,999	21,723	5,359	5,342	2,505	8,141	1,948	4,818
Race								
One Race %	96.70%	95.60%	95.60%	97.10%	93.00%	89.10%	97.90%	96.70%
Two or More Races %	3.30%	4.40%	4.40%	2.90%	7.00%	1.90%	2.10%	3.30%
White %	94.60%	88.70%	93.20%	30.70%	82.60%	39.30%	95.30%	55.50%
Black or African American %	0.60%	1.00%	0.30%	0.20%	3.50%	0.30%	0.30%	0.50%
American Indian and Alaskan Native %	0.30%	4.90%	1.10%	64.20%	2.70%	44.00%	1.60%	40.20%
Asian %	0.70%	0.40%	0.40%	0.60%	0.70%	1.40%	0.10%	0.10%
Native Hawaiian & Other Pacific Islander %	0.00%	0.00%	0.00%	0.20%	0.10%	0.00%	0.00%	0.00%
Some other Race %	0.60%	0.50%	0.60%	1.30%	3.30%	4.10%	0.50%	0.40%
Hispanic or Latino (of any race) %	2.00%	2.80%	3.00%	3.60%	6.60%	7.60%	1.80%	1.00%

Note.(*County Health Rankings & Roadmaps*, n.d.; *Urban Rural - Census Bureau Tables 2022*, n.d.)

Table 4.2 aligns the existing healthy equity conditions of the selected sample counties with findings within the literature review. The counties with lower health equity also have significantly higher percentages of poverty. A critical component in the social determinants of health research and the zip codes having a strong correlation to health outcomes is tied to income levels and the ability to afford the available housing (Carter, 2020; CDC, 2022; Sallis et al., 2009).

Table 4.3

Census Demographic Data Average by Health Ranking

Health Equity Ranking	Average High	Average Low
Rural %	**94%**	**100%**
Population total	14,710	18,711
Median Age	45.35	39.475
Under 18 %	20.30%	25.90%
65 and over %	21.53%	18.30%
Poverty %	8.78%	22.50%
Housing Units (Total)	7,203	10,006
One Race %	95.80%	94.63%
Two or More Races %	4.20%	3.13%
White %	91.43%	53.55%
Black or African American %	1.18%	0.50%
American Indian and Alaskan Native %	1.43%	38.33%
Asian %	0.48%	0.63%
Native Hawaiian & Other Pacific Islander %	0.03%	0.05%
Some other Race %	1.25%	1.58%
Hispanic or Latino (of any race) %	3.35%	3.75%

The demographic data aligns with the known research identified in the literature review. The low health equity counties have significantly higher rates of poverty than their high health equity counterpart. There is also a significant difference in racial composition, with the largest minority group present in the low health equity cohort is American Indian and Alaskan Native. An interesting correlation between the two groups that was not identified in the research is the

higher median age and an older population. In the low equity cohort, the median age was younger, and the percentage of youth (under 18) was significantly higher.

Land Use Policy Document Analysis

The researcher coded seventy-three land use documents once manually, and secondly using key word searches, and thirdly using ATLAS T.I beta AI Coding feature. There were 21,287 quotes coded with 877 codes. Code-document analysis was conducted in multiple groupings. Land use documents grouped by high health equity ranking compared to land use documents grouped by low health equity ranking. Each county was not represented equally by document quantity. To ensure one county thematic analysis did not outweigh others due to lower document count, each county was also compared by health ranking.

Table 4.4

Oklahoma Selective Land Use Code Frequency by Health Equity Ranking

	Low (Adair County)	**High (Alfalfa County)**
Diverse housing stock (Gr=7)	0	1
Housing Issues: Housing shortage (Gr=8)	1	0
Housing regulations (Gr=26)	3	0
Land use policy: Land use regulation (Gr=86)	1	0
Land use policy: Minimum lot size (Gr=379)	5	0
Land use policy: Mixed use (Gr=52)	0	3
Land use policy: Residential density (Gr=59)	0	5
Land use policy: Residential zoning (Gr=2386)	76	6
Land use policy: Zoning (Gr=329)	4	21
Legal Rules and regulations (Gr=3720)	46	35
Manufactured/Mobile Homes (Gr=655)	46	2
Subdivision Regulation (Gr=2079)	59	42

Note. Gr number represents the number of quotes this code is applied to, the number within the low and high columns is the frequency it appears within the selected Oklahoma documents. Codes with no frequencies in either county were omitted from this table.

Oklahoma had the least amount of land use policy documents. The State is a dillions rule state with enabling language that allows counties to oversee their zoning and development for incorporated areas, however, it does not require them to do so (*Oklahoma County Government Overview,* n.d.). Alfalfa County, the high-ranking health equity county does not have county level zoning or land use policy, therefore the state level zoning regulation was used. Additionally, Adair County, the low-ranking health equity county does not have county level zoning or land use policy, however their incorporated City of Stilwell does. For Adair County, the city level documents as well as the state level documents were utilized as the entire county does not fall within the City of Stilwell.

The high-ranking health equity land use policy documents included more decision-making themes and general land use policy and zoning; while the low-ranking health equity land use documents were more specific in residential zoning regulations, heavy in reference to laws and regulations, and included ordinances regarding mobile and manufactured homes and subdivisions. Given the low equity documents difference in composition was the addition of an incorporated City, heavier detail and oversight was expected.

Table 4.5

Montana Land Selective Land Use Code Frequency by Health Equity Ranking

	Low (Glacier County)	**High (Jefferson County)**
Accessory structures (Gr=247)	0	6
Environmental conservation (Gr=1386)	11	28
Housing Issues: Affordable Housing (Gr=67)	0	2
Housing Issues: substandard housing (Gr=19)	0	1
Housing Stock Increase (Gr=10)	1	0
Affordable housing incentives (Gr=164)	5	9
Commitment to preservation (Gr=33)	1	1
Land use policy: Land Accessibility (Gr=120)	1	0
Land use policy: Land conservation (Gr=38)	0	1
Land use policy: Land use regulation (Gr=86)	2	3
Land use policy: minimum lot size (Gr=379)	1	24
Land use policy: mixed use (Gr=52)	1	2
Land use policy: Residential (Gr=3)	0	1
Land use policy: Residential zoning (Gr=2386)	38	140
Land use policy: Zoning (Gr=329)	7	7
Legal Rules and regulations (Gr=3720	283	318
Manufactured/Mobile Homes (Gr=655)	15	35
Subdivision Regulation (Gr=2079)	430	481
Tourism (Gr=145)	2	4

Note. Gr number represents the number of quotes this code is applied to, the number within the low and high columns is the frequency it appears within the selected Montana documents. Codes with no frequencies in either county were omitted from this table.

Montana gives authority for zoning and land use to the County with the prerequisite for a growth policy being established (*Montana County Government Overview*, n.d.). The low health equity county of Glacier does not have a growth policy and therefore does not have local zoning regulations and their authority defers back to the State. The high health equity county of Jefferson does have a growth policy and therefore does have its own zoning authority that it exercises through official regulations. Both counties have a Capital Improvement Plan as opposed to a comprehensive community plan.

Similarly, yet opposite of the State of Oklahoma, the low health equity county in Montana reverts to the State, while the high health equity county has county level documents. In this revered situation it again is expected that there is an increase in detail and oversight for the county with the additional regulation documents. In Montana, the low equity county has two significant themes which are residential zoning and conservation. The high equity county has greater regulation on residential zoning, subdivision zoning, minimum lot sizes, mobile/manufactured homes, and environmental conservation.

Table 4.6

South Dakota Selective Land Use Code Frequency by Health Equity Ranking

	Low (Roberts County)	**High (Edmunds County)**
Accessory structures (Gr=247)	5	0
Environmental conservation (Gr=1386)	8	9
Land use policy: Land conservation (Gr=38)	0	2
Land use policy: Land use regulation (Gr=86)	1	1
Land use policy: Minimum lot size (Gr=379)	17	14
Land use policy: Residential zoning (Gr=2386)	56	33
Land use policy: Zoning (Gr=329)	16	13
Legal Rules and regulations (Gr=3720)	196	74
Manufactured/Mobile Homes (Gr=655_	37	12
Subdivision Regulation (Gr=2079)	7	29

Note. Gr number represents the number of quotes this code is applied to, the number within the low and high columns is the frequency it appears within the selected South Dakota documents. Codes with no frequencies in either county were omitted from this table.

South Dakota gives authority to counties for zoning and land use and both the high health equity county and low health equity county have local land use regulations. Interestingly, the low health equity county has far more detailed regulations in comparison to the high health equity county with themes showing greater regulation over residential zoning, manufacture/mobile homes, and more detail over the environment and agriculture districts. While the high health

equity policy had three major themes of residential zoning, subdivision regulation, and regulatory compliance.

Table 4.7

Maine Selective Land Use Code Frequency by Health Equity Ranking

	Low (Washington County)	**High (Sagadahoc County)**
Accessory structures (Gr=247)	170	133
Against high density (Gr=2)	0	2
Diverse housing stock (Gr=7)	1	5
Environmental conservation (Gr=1386)	980	595
Housing development (Gr=9	8	2
Housing Issues: Affordable Housing (Gr=67)	41	28
Housing Issues: Housing shortage (Gr=8)	6	0
Housing Issues: Old housing stock (Gr=6)	6	0
Housing Issues: Subsidized housing (Gr=2)	2	0
Housing Issues: substandard housing (Gr=19)	15	3
Housing Issues: Workforce housing (Gr=2)	2	0
Housing market (Gr=40)	36	3
Housing quality (Gr=8)	8	0
Housing regulations (Gr=26)	10	13
Housing Stock Increase (Gr=10)	4	6
Housing Support: Affordable housing coalition (Gr=4)	4	0
Land use policy: Affordable housing incentive (Gr=164)	115	57
Land use policy: Commitment to preservation (Gr=33)	26	21
Land use policy: Development: Affordable Housing Plans (Gr=9)	5	4
Land use policy: Land Accessibility (Gr=120)	81	51
Land use policy: Land conservation (Gr=38)	28	13
Land use policy: Land use (Gr=512)	329	209
Land use policy: Land Use Low Density (Gr=27)	19	9
Land use policy: Land use regulation (Gr=86)	62	34
Land use policy: Minimum lot size (Gr=379)	176	138
Land use policy: Mixed use (Gr=52)	27	27
Land use policy: Residential (Gr=3)	1	1
Land use policy: Residential density (Gr=59)	19	35
Land use policy: Residential development (Gr=2)	2	0
Land use policy: Residential zoning (Gr=2386)	1162	1092
Land use policy: Zoning regulations (Gr=329)	180	144
Legal Rules and regulations (Gr=3720)	1660	1536
Manufactured/Mobile Homes (Gr=655)	314	186
Meets affordable housing standard (Gr=6)	4	2
Subdivision regulations (Gr=2049)	696	810
Supportive housing needs (Gr=14)	4	9
Tourism (Gr=145)	121	51

Note. Gr number represents the number of quotes this code is applied to, the number within the low and high columns is the frequency it appears within the selected Maine documents. Codes with no frequencies in either county were omitted from this table.

Maine has most of the land use documents due to the State of Maine enabling land use authority to the lowest level of government, therefore townships within counties may control their land use policy. Washington County, the low-ranking health equity county selected in Maine had forty-two documents, with major themes being environmental conservation, mobile/manufacture homes, affordable housing incentives, and tourism, with more detail regarding rules and regulations and residential zoning. Sagadahoc County, the high-ranking health equity county had eighteen documents but had more counts of subdivision regulation and residential density.

When combined into low health ranking counties in compared to high health ranking counties there were obvious differences between the two land use document groups. The following table shows the totals of land use document codes by low and high health ranking cohort totals.

Table 4.8

All Counties Selective Land Use Code Frequency by Health Equity Ranking

	Low Health Equity	**High Health Equity**
Accessory structures (Gr=247)	107	72
Against high density (Gr=2)	0	2
Diverse housing stock (Gr=7)	2	6
Environmental conservation (Gr=1386)	742	387
Housing development (Gr=9)	7	1
Housing Issues: Affordable Housing (Gr=67)	34	23
Housing Issues: Housing shortage (Gr=8)	7	0
Housing Issues: Old housing stock (Gr=6)	6	0
Housing Issues: Subsidized housing (Gr=2)	2	0
Housing Issues: substandard housing (Gr=19)	15	4
Housing Issues: Workforce housing (Gr=2)	2	0
Housing market (Gr=40)	36	4
Housing quality (Gr=8)	8	0
Housing regulations (Gr=26)	12	13
Housing Stock Increase (Gr=10	4	5
Housing Support: Affordable housing Coalition (Gr=4)	4	0
Land use policy: Affordable housing incentive (Gr=164)	98	44
Land use policy: Commitment to preservation (Gr=33)	11	6
Land use policy: Development: Affordable Housing Plans (Gr=9)	5	4
Land use policy: Land Accessibility (Gr=120)	69	38
Land use policy: Land conservation (Gr=38)	22	10
Land use policy: Land Use Low Density (Gr=27)	17	8
Land use policy: Land use regulation (Gr=86)	46	20
Land use policy: Minimum lot size (Gr=379)	195	180
Land use policy: Mixed use (Gr=52)	23	24
Land use policy: Residential (Gr=3)	1	2
Land use policy: Residential density (Gr=59)	24	40
Land use policy: Residential development (Gr=2)	2	0
Land use policy: Residential zoning (Gr=2386)	1042	1047
Land use policy: Zoning (Gr=329)	152	122
Legal Rules and regulations (Gr=3720)	1630	1515
Manufactured/Mobile Homes (Gr=655)	396	243
Meets affordable housing standard (Gr=6)	4	2
Subdivision regulations (Gr=2049)	694	857
Supportive housing needs (Gr=14)	3	8
Tourism (Gr=145)	90	22

Note. Gr number represents the number of quotes this code is applied to, the number within the low and high columns is the frequency it appears within the land use documents. Codes with no frequencies in either county were omitted from this table.

There were high frequency counts for environmental conservation, manufactured/mobile homes, and rules and regulations, however the counts were significantly higher for the low health equity land use documents making these a higher concern to be addressed. Tourism and affordable housing incentives such as density bonuses were also more frequently addressed in the low health equity land use document grouping. Residential zoning regulations were equally high in both document groupings with no significant difference. Subdivision regulations were also high in both but significantly with higher frequency in the high health equity land use document group. Residential density was also discussed at a higher frequency rate in high health equity land use document group however aside from the defining residential density, the areas with sentiment it was vastly against high density and in favor of low density.

This diagram shows that there are a variety of housing issues identified that are unique to the low health equity land use document group, this includes old housing, subsidized housing, workforce housing, housing quality, the affordable housing coalition, the need for residential development and a housing shortage. For the high health equity land use document group, the only unique code was against high density. When attempting to identify diversity in housing stock looking at what the beliefs are from the two document groups there appears to be a housing shortage for the low health equity land use group.

Figure 4.1

Sankey diagram of Housing Issue Codes Linked to Health Equity Ranking.

High health equity land use group does not identify a need for subsidized housing and identifies a low housing shortage issue, however, seems to have a greater desire for supportive housing. Low health equity land use grouping has a greater need for affordable housing, a greater housing shortage, and identifies a need for subsidized housing. Interestingly, there were greater frequencies of belief that affordable housing needs were being met in the low health equity land use grouping.

Health Equity Document Analysis

Turning to the health documents collected and sorted by health equity ranking, there were fourteen documents with 780 codes within 8,804 quotes. These codes and quotes identified health issues and disparities as well as other items discussed within the health documents. Ultimately, there was little discussed in regard to housing, except generally has a social determinant of health.

Table 4.9

Housing Code Frequencies within Health Document Grouping by Health Equity Ranking

	High Health Equity	**Low Health Equity**
Housing Issues: Affordable Housing (Gr=80)	8	6
Housing Issues: Housing shortage (Gr=12)	2	1
Housing Issues: Subsidized housing (Gr=3)	1	0
Housing Support: Affordable housing coalition (Gr=7)	3	0
Meets affordable housing standard (Gr=7)	1	0
Population Density (Gr=20)	5	4
Social Services: Housing Assistance (Gr=6)	2	0
Supportive housing needs (Gr=21)	7	2

Note. Gr number represents the number of quotes this code is applied to, the number within the low and high columns is the frequency it appears within the health documents. Codes with no frequencies in either county were omitted from this table.

Health documents did not appear to have a significant amount of input with housing specifically. High health equity grouping identified a need for affordable housing and supportive housing while low health equity grouping mentioned far less regarding housing within affordable housing and supportive housing. The lack of housing discussion within the health documents shows that there is a gap of understanding within the health professions to how significant housing is to obtaining health outcomes.

Chapter 5: Discussion

The findings from the qualitative case study examining land use policies in eight counties across four states offer insightful contributions to understanding how rural America navigates the complex terrain of fostering health equitable communities through land use policy frameworks. The study meticulously analyzed ninety-six documents, including policy documents, reports, and community plans, to discern the extent to which land use policies align with the objectives of health equity in rural settings and how these policies impact the equity in housing stock. The study's objective was to answer two central research questions:

1. Are there land use policies that align with health equitable communities within rural America?
2. Do health equitable communities within rural America have equity in housing stock?

This discussion synthesizes the key findings, interprets their implications, and situates them within the broader literature on health equity and rural development.

Alignment of Land Use Policies with Health Equitable Communities

The investigation into the land use policy documents across the varied rural contexts revealed a nuanced landscape where the intention to promote health equity is evident in some areas but remains ambiguous or underdeveloped in others. For instance, the presence of zoning policies and comprehensive community plans in counties with high health equity rankings suggests a proactive stance towards structuring land use in a manner that potentially supports health outcomes. However, the variation in the availability and detail of these documents, as highlighted by the disparities in the number of zoning regulations between high and low health equity counties, underscores the inconsistency in policy focus and implementation.

Moreover, the thematic analysis of land use documents, such as the comparison between Oklahoma's high and low health equity counties, illustrates the divergent approaches to housing and land use regulation. High health equity counties tended to incorporate broader decision-making themes and general land use policies, while low health equity counties focused more on specific residential zoning regulations and ordinances regarding mobile and manufactured homes. This differentiation in focus might reflect the underlying challenges specific to each county but also indicates a disparity in addressing the broader determinants of health through land use policies.

The findings also highlighted disparities in the availability and scope of land use policies, particularly between high and low health equity counties. For instance, low health equity counties often lacked current Community Health Needs Assessments or Health Improvement Plans, indicating potential gaps in integrating health considerations into land use planning. This discrepancy underscores the critical role of policy frameworks in shaping health equitable environments, as echoed by Baciu et al. (2017) and Fraser & Nelson (2019).

Equity in Housing Stock within Health Equitable Communities

The analysis of land use documents and health equity documents indicates a complex relationship between land use policies and the equity of housing stock. While some counties exhibited an emphasis on diverse housing stock and affordable housing incentives, others were marked by concerns over housing shortages, substandard housing, and a lack of subsidized housing. Notably, the high frequency of codes related to manufactured/mobile homes and environmental conservation in low health equity land use documents points to a pressing need to address housing quality and accessibility issues in these areas.

Interestingly, the high health equity counties did not exhibit a significant need for subsidized housing or identify a prominent housing shortage issue, yet they showed a greater inclination towards supportive housing. This suggests that while high health equity counties may be better positioned in terms of housing equity, there is still room for improvement in ensuring a diverse and inclusive housing stock that meets the needs of all community members.

The analysis revealed significant differences in housing stock equity between high and low health equity counties. High health equity counties generally exhibited a more diverse housing stock, including provisions for affordable and supportive housing. In contrast, low health equity counties were characterized by housing challenges such as shortages, substandard housing, and a lack of affordable options. These findings are consistent with the literature highlighting the impact of housing on health outcomes and the need for equitable housing solutions in rural areas (Gibson et al., 2011; Hernández & Swope, 2019).

The study also identified a notable emphasis on environmental conservation and land use regulations across counties, suggesting a potential area for aligning health equity and sustainable development goals. However, the frequent emphasis on low-density and single-use zoning in some high health equity counties raises questions about the long-term sustainability and inclusivity of such approaches (Evenson et al., 2003)

Limitations

The limitations of this study are mainly surrounding the information not collected, which includes housing stock and the land use under tribal jurisdiction. Other information not reviewed were the minutes of the meetings when the land use policies were approved. This is due to the age of the land use documents and lack of digitalized minutes. Reviewing meeting minutes may provide additional insight as to what the outcomes of the approved land use policies were meant

to be and why. The inability of the researcher to be in person in the counties studied, as well as the lack of interviews and engagement with the community stakeholders are also limitations. Thes components could provide additional insight and understanding. An enthnographic study would allow for a more in-depth understanding for how the communities grew into their current demographics and political environments that contributed to their creations.

Implications for Policy and Practice

The findings of this study have important implications for policymakers, planners, and public health professionals working in rural contexts. First, there is a critical need for integrated approaches that align land use policies with health equity goals. This involves not only the adoption of zoning regulations and comprehensive plans that consider health outcomes but also the active engagement of communities in the decision-making process to ensure that policies reflect the unique needs and challenges of rural areas.

Second, addressing the equity of housing stock requires a multifaceted strategy that goes beyond traditional zoning and land use regulations. This might include the development of affordable housing programs, incentives for diverse housing developments, and targeted interventions to improve housing quality and accessibility, particularly in low health equity areas.

This dissertation's findings lay the groundwork for future research and action in several ways:

1. Policy Development: There is a need for comprehensive policy frameworks that explicitly incorporate health equity into land use and housing policies at both the state and local levels.
2. Cross-Sector Partnerships: Building stronger collaborations between health, planning, and housing sectors can facilitate the sharing of best practices and the

development of integrated strategies that address the social determinants of health, including housing.

3. Community Engagement: Engaging communities in the planning process can ensure that land use and housing policies are responsive to the needs of all residents, particularly the most vulnerable, thereby advancing health equity.
4. Longitudinal Studies: Further research should examine the long-term impacts of land use policies on health outcomes in rural communities to identify effective strategies and policies for promoting health equity.

Conclusion

The results of this study reveal a nuanced relationship between land use policies and health equity across eight rural counties in the United States. The analysis, drawing from an examination of ninety-six policy documents, community plans, and health records, identifies both alignment and gaps in how land use policies contribute to health equity. It was found that counties with high health equity rankings often have comprehensive community plans and zoning policies. Conversely, counties with low health equity rankings display significant deficiencies, such as the absence of current Community Health Needs Assessments and Health Improvement Plans, indicating a gap in integrating health considerations into land use planning.

This discrepancy in policy implementation suggests a disparity not only in the availability of supportive land use policies but also in their scope and focus. High health equity counties tend to adopt broader decision-making themes that encompass general land use policies, while low health equity counties focus more narrowly on specific residential zoning and housing regulations. This differentiation may reflect underlying challenges specific to each

county and highlights the complex dynamics at play when addressing the broader determinants of health through land use policies.

Through analysis, it has been determined that while some rural areas have effectively integrated health equity into their land use and housing policies, significant disparities still exist, particularly regarding housing equity. The study emphasizes that creating health equitable communities requires not only proactive and inclusive land use and housing policies but also robust community engagement and cross-sector collaborations. These elements are crucial to address the unique needs and challenges of rural areas, ensuring that policies are not only formulated but also implemented in a manner that genuinely advances health equity.

Further research that can delve deeper into the root cause of poverty within the low-health equity counties, as well as the community involvement and stakeholder conversations during the creation of their land use policy will provide better insight into how to create meaningful change. As recommended by Bowleg (2017), having a full ethnographic study in the health equity arena will provide a better range of knowledge. Conducting a study like this in nature but fully ethnographic will lead to a better understanding of how land use policy can be used to create health equity.

In conclusion, this study sheds light on the intricate relationship between land use policies and health equity in rural America. While there are examples of policies that align with the goals of health equitable communities, significant disparities remain, particularly concerning the equity of housing stock. Addressing these challenges necessitates a collaborative and integrated approach that encompasses a broad spectrum of stakeholders and leverages the unique strengths and resources of rural communities. By fostering a more coherent and equity-focused

land use policy framework, rural America can make strides towards achieving health equity and improving the well-being of all its residents.

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