

**The**

# **Pennsylvania Geographer**

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**ON THE COVER:** The view from Flat Rock Vista at Colonel Denning State Park, Newville, PA. Photo credit: JNolt/Wikimedia Commons

# THE PENNSYLVANIA GEOGRAPHER

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**FROM THE EXECUTIVE DIRECTOR**

Dear Members of the Pennsylvania Geographical Society,

On behalf of the Executive Board, I hope you all had a restful and enjoyable holiday season. As the new semester gets underway, I wish you the very best in your teaching, research, and studies in the months ahead.

It is a pleasure to introduce the newest edition of *The Pennsylvania Geographer*. The papers in this issue reflect the strong and diverse scholarship of our community, and I am confident you will find them both engaging and thought-provoking. I would like to extend sincere thanks to the Editors and staff for their hard work and care in assembling this edition. I hope you take time to enjoy the issue.

This past year was a successful one for the Society. Our annual meeting, held in November at Mount Aloysius College, was well attended and showcased the vitality of geography in Pennsylvania and beyond. A highlight of the meeting was the presentation of research by our undergraduate grant recipients. Last year, three students were awarded undergraduate research grants: Aly Booth (Villanova University), Ann Marie Potthast (Salisbury University), and Marshall Raff (Salisbury University). Each presented excellent work at the annual meeting, and we are proud to support emerging scholars at this important stage in their academic careers.

Looking ahead, there are several important items on the horizon. A new round of undergraduate research grant applications will open in early February. Our next annual meeting will take place tentatively on Friday, 6 November at West Chester University, and we look forward to gathering there. Board elections will also be held in the fall, and I encourage members to consider participating in this process.

Finally, I remind you to nominate deserving colleagues for the Society's annual awards and to submit your work to *The Pennsylvania Geographer*. The strength of our journal and our organization depend on your continued involvement and contributions.

Thank you for your support of the Pennsylvania Geographical Society. I look forward to another productive and rewarding year ahead.

Frank Galgano, Executive Director  
Villanova University

**THE PENNSYLVANIA GEOGRAPHICAL SOCIETY**

The Pennsylvania Geographical Society is a non-profit organization which promotes the use of geographical skills and information to support the application of geographical techniques in a broad spectrum of public and private employers; encourages research in geography, applied geography and geographic education; represents the discipline of geography to educational institutions and related professional organizations; facilitates the exchange of ideas, methods, and materials among geographers in a college/university setting, geographers in the public/private setting, and teachers of geography; provides and partake in activities to foster geographical literacy; and promotes effective teaching of geography at all levels and in all settings.

To learn more about the Pennsylvania Geographical Society and how to become a member, please visit our website: **thepgs.org**

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## IMPACTS OF SHORT-TERM RENTALS SURROUNDING THE SOUTH MOUNTAIN CONSERVATION REGION, PENNSYLVANIA

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### Abstract

*The South Mountain Conservation Region in south-central Pennsylvania is a vital ecological and cultural landscape supporting environmental stewardship, outdoor recreation, and sustainable tourism. This study uses GIS-based spatial analysis to examine the distribution and economic performance of short-term rentals (STRs) in Adams, Cumberland, Franklin, and York counties, with a particular focus on properties near Michaux State Forest. The findings reveal significant clustering, with 65 STRs located within one mile of the forest achieving an average daily rate (ADR) of \$305 and an occupancy rate of 44%, both significantly higher than regional averages. These properties generate an average annual revenue of \$21,532, reflecting the growing demand for premium, nature-based accommodations. While STRs contribute to local economic growth, they also raise concerns about infrastructure strain, resource use, and housing affordability. This research provides a framework for assessing STR impacts in rural conservation areas, offering insights to guide sustainable tourism policies.*

**Keywords:** short-term rentals, GIS, tourism geography, conservation, sustainable tourism

### Introduction

The South Mountain Conservation Region, spanning Adams, Cumberland, Franklin, and York counties in south-central Pennsylvania, is a vital ecological and cultural landscape that plays a crucial role in the area's environmental stewardship, outdoor recreation, and sustainable tourism. Encompassing Michaux State Forest, the Appalachian Trail, and other protected natural areas, this region is renowned for its scenic beauty, rich biodiversity, and historical significance. As a key conservation area, the South Mountain Conservation Region provides essential ecological services, including watershed protection, wildlife habitats, and opportunities for

outdoor recreation.

In recent years, the rise of short-term rentals (STRs) in the region has mirrored national trends in the sharing economy, with platforms like Airbnb reshaping the tourism landscape. This shift is reflected in broader patterns in the sharing economy literature, which highlight both opportunities for economic growth and challenges related to housing, land use, and resource pressures in rural areas (Guttentag 2015). This study focuses on mapping and analyzing the growth and distribution of STRs within the South Mountain Conservation Region, examining their economic impact, potential pressures on local resources, and implications for conservation and community sustain-

ability.

By integrating GIS-based spatial analysis, the study contributes to tourism geography methodologies by illustrating the spatial distribution of STRs, the interplay between conservation priorities and tourism development, and broader patterns of economic clustering and place-based consumer preferences. The study aligns with theories of tourism geography, which emphasize the role of natural and cultural attractions in shaping regional tourism economies. Additionally, the analysis of STR clusters near Michaux State Forest could reveal how the area's natural attractions influence rental prices and target audiences, suggesting that people may be willing to pay more for locations with appealing outdoor amenities. This tension between tourism development and conservation priorities echoes broader themes in sustainability research, where balancing economic benefits with environmental stewardship remains a critical challenge in rural and protected areas (Butler 1980; McCool and Moisey 2001).

By providing detailed insights into the relationships between STR growth, proximity to conservation areas, and economic impacts, this study advances our understanding of how the sharing economy influences land use, housing markets, and tourism development in rural landscapes. By providing a detailed inventory of STRs, this research aims to inform local policy and decision-making, ensuring that the growth of STR activity aligns with the region's conservation goals and enhances its

long-term economic and environmental resilience.

### **History and Growth of STRs**

Traditional economies where goods and services are primarily owned, marketed, and sold by companies have been impacted over the past two decades with an alternative mode shared by a community with a collaborative, cost-effective approach known as the "sharing economy" (Schor and Attwood-Charles 2017). The sharing economy is an economic model based on the idea of shared goods, services, and resources where individuals engage in peer-to-peer interactions, for a fee, on an online platform. Companies such as Airbnb, Uber, Lyft, and TaskRabbit are common household names, however more unique niche markets are gaining usage. GetMyBoat connects boat owners with daily recreationalists, Peerby allows neighbors to share and borrow items promoting a sense of community, and Eatwith connects travelers to locals through immersive dining experiences. The sharing economy has exploded in recent years and is estimated to reach over \$335 billion in earnings by 2025 (do Nascimento and Mazali 2023).

STRs, the renting of furnished housing for a shorter period than normal rental agreements, has grown worldwide since the establishment of Airbnb in 2008 (Furukawa and Onuki 2022) and are a major player in the sharing economy. In Pennsylvania, STRs are defined as providing lodging for less than 30 days to the same person (Pennsylvania Department of Revenue 2024).

Airbnb was started by three students in 2008 as a startup and grew to an estimated \$30 billion company by 2020, with over 3 million listings in 190 countries (Nieuwland and van Melik 2020). The growth of Airbnb was even greater the following year, reaching an estimated value of \$124 billion in 2021 (Simic and Liem 2023). Unquestionably, STRs have restructured the accommodation and tourism market (Falk and Yang 2021).

STRs vary by geography and are influenced by the physical environment, social, economic, and jurisdiction factors. Today the range and styles of STRs is vast, and each city defines these accommodations in their own language, but they are generally categorized into the following three groups: 1) Primary hosted STRs are operated in the primary residence where the host is at home with the guest and usually only part of the home is offered to the guest; 2) Primary un-hosted STRs are ones where the entire primary residence is rented to the guest, but the host is absent; and 3) Nonprimary STRs are entire properties that are rented, and these units are not the primary residence of the host, and the host is absent. This is usually the renting of a second home for commercial purposes (Furukawa and Onuki 2022).

The three distinct categories demonstrate how this sharing economy can range from the initial idea of sharing an extra bedroom to generate additional income to a potentially big business where investors target properties with the sole intent to purchase and list a

property as an STR. Some STR hosts have taken this model to a professional level, often resulting in gentrification and increased housing costs (Simic and Liem 2023).

STRs impact traditional hotels and Dogru, Mody, and Suess (2019) found that Airbnbs have a negative impact on the lower-cost segment of hotels; however, they seem to be the preferred option for many travelers. Vacationers are often looking for something different than a traditional hotel, especially in more rural vacation destinations where people are looking for a more authentic, local experience with different lodging options and possibly more affordable than a traditional hotel (Gottlieb 2013; Furukawa and Onuki 2022).

### **Housing, Global Economics, Workforce Demands, and Pandemics**

The development and growth of STRs occurred during a time when the housing market, global economics, technology, workforce demands, global pandemics, and society was unsettled. Gottlieb (2013) suggested that STRs were a great way to leverage people's largest asset, their home, by renting out space to supplement their income, help pay mortgages and avoid foreclosures during the recession. The housing market experienced a steady, gradual growth between 2013 and 2019, supported by government interventions and stricter lending practices, promoted a more stable, long-term residency, but also tightened supply which led to a steady increase in demand. However, in 2020 and 2021, the housing market

exploded, driven by high demand and low mortgage rates (Kuchler, Piazzesi, and Stroebel 2023). The Federal Reserve kept interest rates low, which resulted in historically low mortgage rates and made borrowing more affordable for potential homebuyers resulting in a surge of home sales. Some markets lacked supply, which led to bidding wars and higher property values.

STRs contributed to the housing shortage in some locations, which varied from city to city. For example, Seattle, Washington, found no impact of STRs on the housing market whereas New Orleans, Louisiana, saw an increase in property values (DiNatale, Lewis, and Parker 2018). From a business perspective, STRs can potentially preserve property values by allowing homeowners to offset mortgages and maintenance fees. STRs usually generate higher profits than long-term rentals and tend to increase long-term rents by limiting the housing supply of the market, which has resulted in a housing shortage in some cities (Hübscher and Kallert 2023). Additionally, STRs as an investment opportunity has increased involvement by corporate landlords, often displacing original residents and assisting the gentrification of neighborhoods. These factors contribute to some locations experiencing an affordability and availability housing problem.

Additionally, the COVID-19 pandemic affected all aspects of life, including work, travel, consumption patterns, and of course, public health. As people emerged from an imposed lockdown, many people looked for less-crowded,

open spaces, and rural environments. Many people who could work remotely left the urban environment for more rural areas. STRs filled these housing needs as tourists tended to travel to more remote destinations and rent private apartments and homes to ensure social distances (Zeng et al 2022). Attractive areas with mountains, national parks, state parks, coastal areas, and rural areas saw the influx of tourist and remote workers. In areas where the housing markets have declined over the decades, some saw this influx as a perceived lifeline (Colomb and Gallent 2022).

Finally, changes in workforce demands and technology also contributed to the success and growth of STRs. A new type of worker called “digital nomads” appeared who could work online (Cook 2023), and they took advantage of short- and medium-term rentals (Colomb and Gallent 2022). Many jobs have remained completely or partially online, allowing workers flexibility. The range of STRs available provided housing and lifestyle options for the digital nomad to be more cost effective than hotels and more flexible and mobile than traditional long-term lease agreements.

### **Positive and Negative Aspects of STRs**

A body of literature exists on the benefits of STRs (Furukawa and Onuki 2022), which include additional income for the hosts and economic opportunities for the tourism region. STRs can have a positive impact on the local economy and generate revenue for local governments through lodging taxes,

sales taxes, and property taxes, which can fund public services and infrastructure (Hübscher and Kallert 2023). Texas, for example, amended its state law to apply the occupancy tax in addition to municipality fees and taxes which resulted in Austin reporting \$100,000-300,000 added revenue (Gottlieb 2013).

Empirical evidence suggests that guests stay longer at their destination, spending more money near the accommodations (Nieuwland and van Melik 2020). STRs have the potential to create jobs especially in the hospitality and tourism sectors and can benefit local business as travelers often visit local restaurants, cafés, and shops. STRs provide flexible lodging options for travelers, business professionals, individuals, and families with more diverse offerings than traditional hotels. They can lead to cultural exchange, as STRs are seen as a more authentic experience for the travelers where they feel connected to the local community and they can participate in neighborhood events, community activities, festivals, and support local causes. Guests enjoy many of the amenities found in STRs that are not typically found in a hotel, such as puzzles and games, private hot tubs, and access to equipment like bikes, kayaks, and fishing gear (Saraswat and Agarwal 2023). Additionally, STRs are usually seen as a more sustainable mode of consumption because STRs usually consume less energy and produce less waste than traditional hotels (Furukawa and Onuki 2019).

In both rural and urban locations, STRs incentivize property owners to

maintain and improve their properties in efforts to attract guests. In some urban areas this has led to revitalizing neighborhoods and gentrification (Hübscher and Borst 2023). However, in rural areas, STRs typically draw a different demographic than may normally live in the area which can encourage new businesses, restaurants, and recreational opportunities which in turn can incentivize improvements in local infrastructure, such as roads, utilities, and public amenities that benefit both tourists and residents. Colomb and Gallent (2022) suggest that some rural areas see STRs as a lifeline, particularly in areas with traditionally older residents experience an influx of young professionals and families. STRs in rural areas often highlight the unique natural beauty, cultural heritage, or recreational opportunities, and thus STRs can contribute to environmental awareness and the preservation of resources. In many rural areas, STRs can align with tourism efforts and marketing strategies by offering more nature-based, sustainable options like camping, glamping, or small houses that fit well within the natural setting, more so than a large hotel.

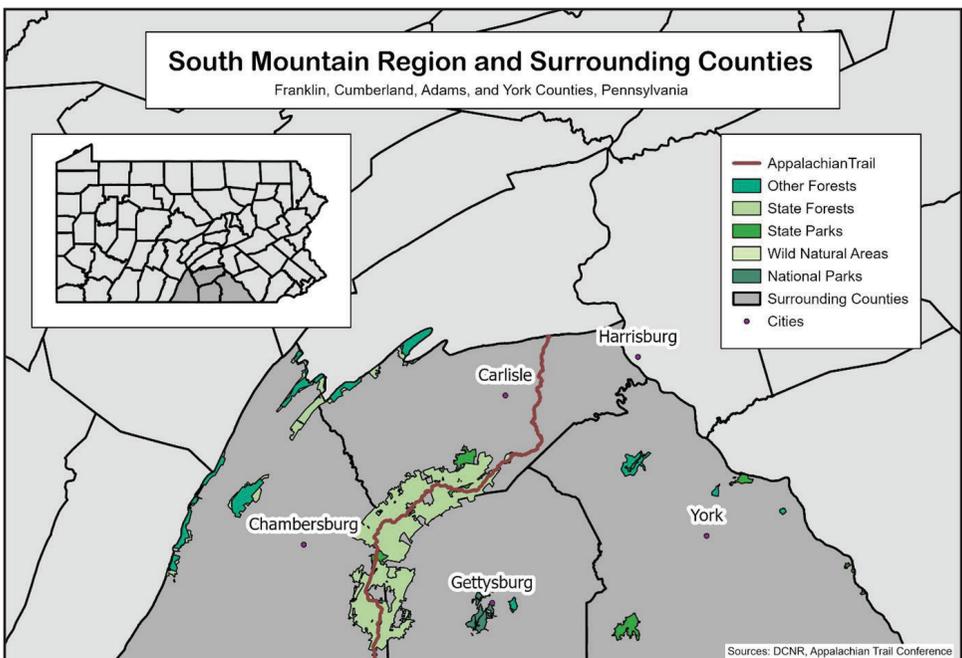
The literature also reports on the negative aspects of STRs with challenges focused on disturbances, neighborhood dynamics, housing affordability, rental availability, property rights, and regulatory concerns (Colomb and Moreira de Souza 2023). Negative nuisances such as noise, litter, and traffic have been reported, and the increased use of fire, police and medical services can put a strain on public services and infrastruc-

ture, without contributing proportionally to the tax base (Dogru, Mody, and Suess 2019). Additionally, many of the online platforms do not share their information, so many municipalities do not even know how many STRs exist, and how often they are being used. STR hosts have no standardized health and safety regulations and hold varying types of insurance. STRs can potentially change neighborhood dynamics as they can be more profitable for the owners than selling or long-term rentals. The conversion of residential units into STRs can displace residents with tourists, and the frequent turnover of guests can disrupt the sense of community. A few negative aspects of STRs are unique to rural areas (DiNatale, Lewis, and Parker 2018). Depending upon the nature of the area and its attractions,

STRs may contribute to a significant seasonal imbalance where the number of visitors and economic activities occur during a season and create challenges for businesses and services to balance the differences between peak and off-peak times. Additionally, STRs can have the risk of over development and disruption of local culture that can unsettle the traditional way of life and threaten the open spaces and natural beauty in rural communities.

### **The Geography of South Mountain**

The South Mountain Conservation Region encompasses portions of Adams, Cumberland, Franklin, and York counties in south-central Pennsylvania, and is a region with unique geographical, natural, cultural, and recreational significance, as seen in Figure 1.



**Figure 1. South Mountain Conservation Region within the surrounding four counties.**

Situated at the northern end of the Blue Ridge Mountains, it is part of a multi-state greenway that spans from Virginia, through Maryland, to Pennsylvania, and merges with the Ridge and Valley and Piedmont ecoregions and thus has a diverse terrain of ridges, foothills, valleys, and woodlands (Pennsylvania Department of Conservation and Natural Resources 2023). The region has a unique mix of wildlife and habitats and is known for its trout streams and woodlands.

The South Mountain Conservation Region is unique for its blend of natural beauty, cultural heritage, and environmental stewardship. It features the Appalachian Trail, scenic forests, and historical landmarks, which attract both outdoor enthusiasts and those interested in the region's rich heritage. The area's commitment to conservation is reflected in local partnerships and community-driven efforts to protect its landscapes, while also fostering sustainable tourism and recreation (South Mountain Partnership 2024).

South Mountain has played an important role in Pennsylvania's and the United States' history, and the region is rich in cultural heritage. The terrain influenced land use and settlement patterns, and today supports the preservation of numerous historical sites, museums, and educational centers. Additionally, the fertile farmlands significantly contribute to the agricultural economy of the regions. The clean waterways and fertile soil support a variety of crops and agricultural activities.

In the center of the region is Mich-

aux State Forest, covering 85,000 acres, and includes Caledonia, Pine Grove Furnace, and Mont Alto state parks. These are the focus points for outdoor enthusiasts and recreational opportunities that attract visitors year-round. Hiking, camping, fishing, hunting, bird-watching, and nature photography are some of the more common activities.

The diverse natural and cultural attractions of the South Mountain region make it an ideal destination for tourism, and potentially STRs. Cabins, cottages, and campsites would allow visitors to immerse themselves in the natural landscape with preserved land, wildlife, forest, rivers, and farmland while supporting the local economy filled with unique shops, farmers markets, local food, wineries, natural heritage, historic sites, breweries, and cideries. However, various stakeholders, including nonprofits, government agencies, businesses, and community members need to consider pressures on the environment to ensure conservation and sustainable development. Additionally, the region's municipalities have varying levels of STR regulations, along with the abilities to enforce them. This study aims to inventory the number of STRs, and their spatial distribution throughout the conservation core area and surrounding Adams, Cumberland, Franklin, and York counties to provide a sound foundation for managers to make informed decisions on how to protect the region's natural resources while increasing recreation, usage, and awareness.

## **Inventory of STRs, Tourism, and Economic Potential in the South Mountain Region**

The first goal of this project was to inventory the number of STRs, their spatial distribution, and characteristics in types of lodging. Using data from AirDNA (2024), a proprietary web service that estimates a 95% accuracy of all aggregated STRs listed on Airbnb, HomeAway, and Vrbo, the total number of STRs from 2008 to 2023 was mapped. AirDNA sells a “Property Performance Data Report,” which includes historic data of every STR dating back to 2008. Each row of data provides the latitude and longitude for each property on the market. GIS was used to map all current STRs and display time series maps of growth over the past decade.

The second goal of the project was to examine the characteristics of the STRs, such as their occupancy rates, price tiers, and revenue generated, to determine their impact on tourism in the region. The AirDNA data provided information on types of accommodation, number of rooms rented, number of allowed guests, occupancy rates, and price tiers for an in-depth examination. Examining STRs within 1, 2, and 5 miles of Michaux State Forest suggested differences in usage compared to the surrounding counties or even the state. This dataset also raises several additional research questions: How does the density of STRs differ by proximity to Michaux State Forest, and what factors influence these patterns? How does the average revenue of STRs near Michaux compare to the broader region, and

what explains the observed disparities? These questions highlight the potential for further analyses to better understand the spatial and economic dynamics of STRs in this unique conservation and tourism landscape.

### **Comprehensive STR Inventory from 2008 to 2023**

A comprehensive STR inventory was completed on the number, location, and types of STRs in the South Mountain Region, including the number of rentals, property types, and characteristics. A GIS was used to map time series data, and the analysis displays a growing STR rental activity. Figure 2 and the following time series discussion focuses solely on the number of STRs created each year, not the total number operating at any given time, or the longevity of each STR. The maps and inventory provide insights into STR patterns of growth, locations, characteristics, and economics.

The first STR created in the four counties containing the South Mountain Conservation Region was in Chambersburg in 2009, followed by one in East Berlin in 2010. Both were in the initial mode of Airbnb, offered as private rooms in an occupied house. In 2011, five new STRs were created, all as entire homes or apartments. The following year, 2012, eight were created, and the beginning of more experiential offerings start to emerge, as two of the new ones were cabins (Figure 3).

The next few years, 2013, 2014, 2015, 2016, 2017, and 2018 followed national patterns with large consistent

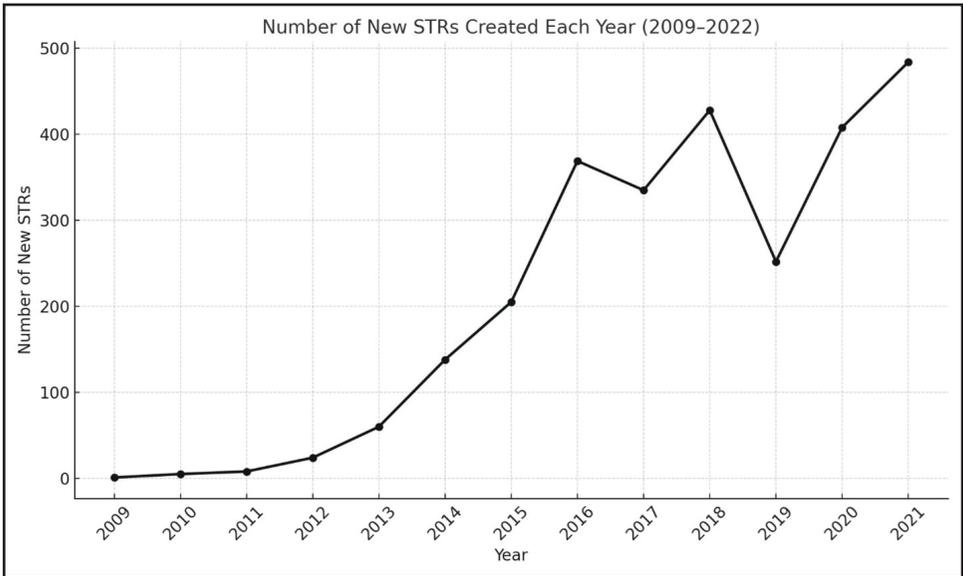


Figure 2. Number of STRs created each year in Adams, Cumberland, Franklin, and York counties.

growth of 24, 60, 138, 205, 369, and 335 new STRs, respectively (Figure 4). In 2019, there were 428 new STRs in the four counties. While most were houses and apartments, there were 49 unique property types that included a range of lodging such as cabins, nature huts, cottages, campsites, campers/RVs, tents, barns, chalets, domes, and earth houses.

Not surprisingly, the growth in new STRs was slightly diminished in 2020 as a reflection of the COVID-19 pandemic, with the initial imposed lockdown followed by restrictions on many aspects of travel, but the region still saw 252 new STRs. In the following years, 2021 and 2022, the number of STRs created rebounded with 408 and

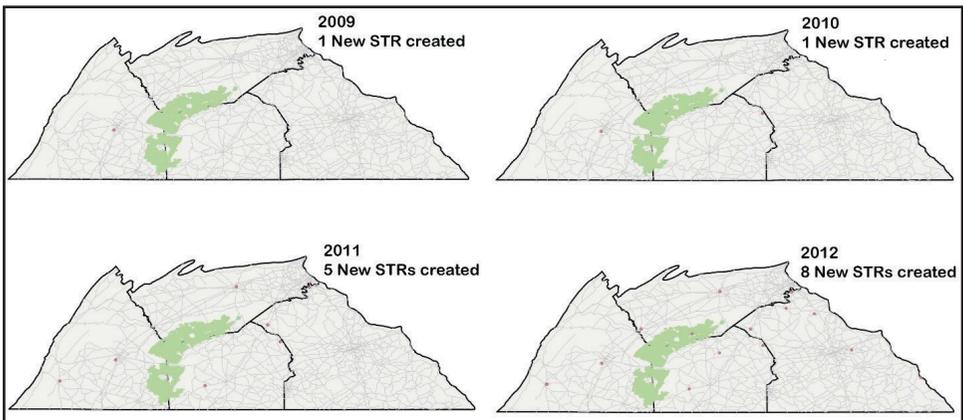


Figure 3. New STRs in Adams, Cumberland, Franklin, and York counties, 2009 to 2012.

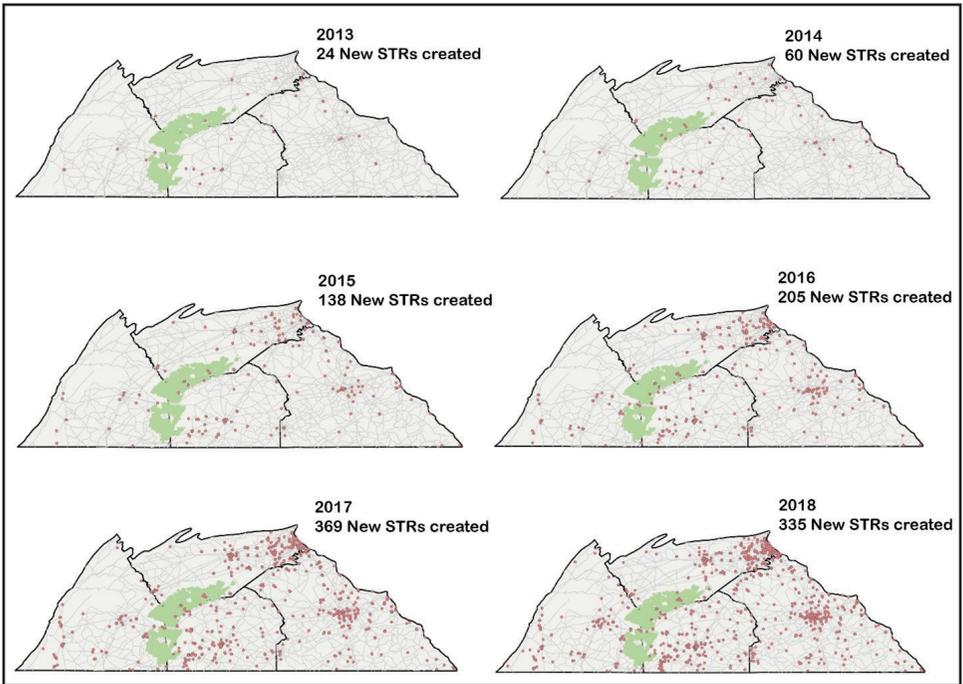


Figure 4. New STRs in Adams, Cumberland, Franklin, and York counties, 2013 to 2018.

484, respectively (Figure 5). Many of the STRs were concentrated in the more urban areas, but there is a consistent pattern throughout the region.

The most current comprehensive inventory of all active STRs in the

South Mountain Conservation Region is based on the last complete data year, 2023. A total of 1,695 STRs operated in Adams, Cumberland, Franklin, and York counties (Figure 6). Assuming people focused on tourism around the

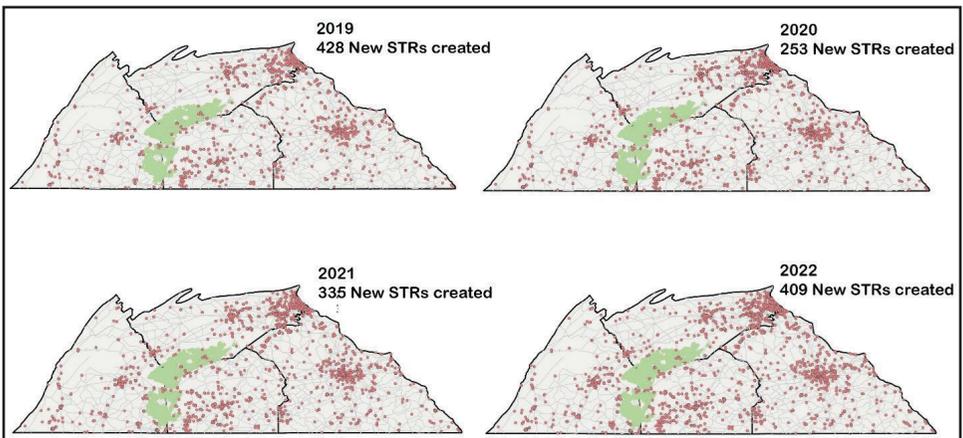
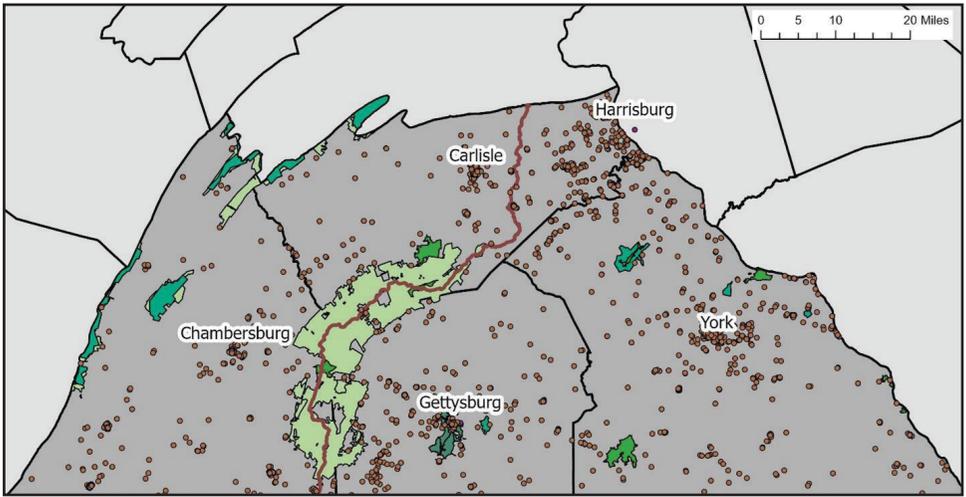


Figure 5. New STRs in Adams, Cumberland, Franklin, and York counties, 2019 to 2022.



**Figure 6.** There are 1,695 STRs in Adams, Cumberland, Franklin, and York counties active in 2023.

South Mountain Conservative Region as opposed to the cities and towns, buffers surrounding Michaux State Forest were created. A total of 65 STRs were located within one mile of Michaux State Forest, another 30 located between one and two miles, and an additional 141 located between two and five miles from the state forest's borders. Of those 65 located within one mile, the most common types of properties were houses (23), followed by cabins (15), cottages (5), and then a variety of chalets, tiny houses, dome houses, farm stays, barns, and lodges.

The total revenue generated by all STRs in 2023 in the four counties was \$25,722,920 and the mean STR generated \$15,175 per year with an average daily rate (ADR) of \$179. The 65 STRs that operated within one mile of Michaux State Forest generated \$1,378,069 in revenue in 2023 with an ADR of \$305. Revenues of these 65 STRs ranged from \$0 to \$90,598, with the average listing

generating \$21,532 in 2023.

Individual listings are categorized into one of five price tiers, defined by the performance of the listing's average daily rate over the past 12 months. AirDNA examines the entire state's STR market and divides all the listings into five groups: budget, economy, mid-scale, upscale, and luxury. Ideally, each price tier segment has roughly an equal number of listings. In 2023, Pennsylvania had roughly equal percentages across all five tiers: budget 19%, economy 18%; mid-scale 17%, upscale 17%, and luxury 18%. This relatively equal division allows comparisons of localized regions to determine if different areas cater to a particular price segment of the market. Of the 1,695 STRs in the four counties, the price tier breakdown was as follows: budget 16%, economy 20%, mid-scale 17%, upscale 17.3%, and luxury 17.6%. The 65 STRs within 1 mile of Michaux State Forest had a much larger percentage of offerings in the higher price tiers:

budget 6%, economy 8%, mid-scale 13%, upscale 24%, and luxury 11%. The analysis reveals that Pennsylvania's STR market is evenly distributed across price tiers, the four counties show a slightly higher concentration of economy and upscale rentals, and the 65 STRs within 1 mile are skewed toward higher-end offerings, with significantly fewer budget and economy options compared to both the state and county averages.

A deeper analysis of the 65 STRs located within 1 mile of Michaux State Forest shows that the accommodation ranged between 0 and 10 bedrooms that can accommodate between 1 and 24 guests each, for a total of 498 visitors. The average occupancy rate for STRs across Pennsylvania was 35%, while in the four counties it is 36 %, and the 65 STRs within 1 mile of the state forest is 44%. This notably higher occupancy rate suggests increased usage and demand in this area closest to the park and may be of interest to those managing the total number of visitors and resources.

## **Discussion**

The growth of STRs in the South Mountain Conservation Region follows national trends with significant expansion starting around 2011, accelerating through 2019, a slight decline during the pandemic, and regaining momentum in 2022 and 2023 driven by increased consumer demand for unique, flexible lodging options. The national surge in STRs during this period was further influenced by a boom in remote work, leading many to seek accommodation in more rural or scenic areas. As seen

elsewhere, the expansion of STRs in the South Mountain area has been closely tied to tourism, with an emphasis on unique property types and experiences, such as cabins and chalets.

Within the four counties of Adams, Cumberland, Franklin, and York, the STR market displays a dynamic growth pattern similar to national trends but with notable local variations. While the general growth aligns with broader state and national patterns, these counties have a stronger concentration of mid-range and upscale rentals compared to the state's average, indicating a more premium-focused market. The region's STRs are heavily clustered around recreational and scenic areas, especially near Michaux State Forest, with properties offering a mix of cabins, cottages, and more upscale lodging options. In contrast to urban centers, where STRs often cater to budget-conscious travelers, the South Mountain Region's STR market appears to cater to tourists seeking a higher level of comfort and experience, which may reflect the region's appeal as a getaway destination for both nature enthusiasts and those seeking more luxurious accommodations.

The 65 STRs located within 1 mile of Michaux State Forest represent a particularly important subset of the market, with a high ADR of \$305 and significantly higher occupancy rates (44%) compared to the state and the four-county averages. These higher occupancy rates suggest that this area is seeing substantial demand, potentially driven by tourists seeking access to out-

door recreational opportunities such as hiking, camping, and nature experiences. The concentration of higher-end properties (upscale and luxury) within this area may indicate that visitors are attracted to more immersive, nature-based experiences with higher expectations of comfort and amenities.

STR density varies significantly by proximity to Michaux State Forest. There are 65 STRs within 1 mile, 30 STRs between 1 and 2 miles, and 141 STRs between 2 and 5 miles of the forest. This clustering pattern highlights the appeal of the immediate forest area to visitors, while the larger number of properties within the 2–5-mile range reflects the broader tourism market in the surrounding region. In terms of revenue, STRs near Michaux State Forest demonstrate exceptional performance, generating an average of \$21,532 annually per listing compared to the regional average of \$15,175. This disparity is primarily attributed to the prevalence of upscale and luxury properties near the forest, as well as significantly higher occupancy rates.

The time-series data reveal that the creation of STRs has been geographically diverse within the region, but certain areas, particularly those close to Michaux State Forest, experienced earlier and more sustained growth. These patterns align with broader trends in tourism and the sharing economy, where natural and recreational attractions serve as strong magnets for both travelers and STR operators.

This trend is consistent with national patterns, where rural STRs near

natural attractions often target affluent tourists looking for more personalized and comfortable stays. However, the increasing number of visitors could place stress on the region's infrastructure, particularly local roads, public services, and conservation efforts. The concentration of STRs in the area could lead to resource strain, as these properties attract a substantial number of visitors, potentially exceeding the carrying capacity of some areas. Additionally, while STRs contribute to local economic growth through lodging taxes and spending on local businesses, they may also exacerbate housing affordability and availability issues, as more residential properties are converted into tourist accommodations.

### **Conclusion**

In conclusion, the rapid growth of STRs in the South Mountain Conservation Region aligns with broader national and state trends, reflecting a shift in consumer preferences toward unique, flexible lodging experiences, particularly in scenic, rural areas. The data from Adams, Cumberland, Franklin, and York counties demonstrate a significant increase in STRs, especially from 2015 onward, which mirrors the national trend of growing demand for alternative accommodations, heightened by the pandemic and the rise of remote work. The concentration of STRs around Michaux State Forest, with its high occupancy rates and premium property offerings, suggests that the region has become a desirable destination for both nature lovers and those seeking

outdoor experiences.

The findings highlight notable patterns in STR density, lodging types, and economic performance within the region. STRs within 1 mile of Michaux State Forest generate significantly higher revenue and attract higher occupancy rates than those farther away, underscoring the appeal of properties near key recreational areas. The prevalence of upscale and luxury offerings near the forest reflects a premium-focused market. However, these same patterns raise questions about the potential for resource strain and the equitable distribution of tourism benefits across the broader region.

This study provides a framework for analyzing STR impacts in other rural conservation areas, offering insights into how proximity to natural attractions influences market dynamics. These findings can contribute to global discussions on STR impacts, highlighting the importance of context-specific policies to address challenges such as gentrification, infrastructure strain, and housing availability. Future research could build on these results by examining similar patterns in other regions and exploring how STR markets evolve in response to changing tourism trends and environmental pressures.

By addressing these challenges and capitalizing on the opportunities presented by STRs, stakeholders in the South Mountain Conservation Region can promote sustainable tourism that preserves the area's natural and cultural heritage while ensuring its long-term economic viability. This approach can

serve as a model for managing STR growth in rural and conservation-focused destinations worldwide.

### **Acknowledgement**

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## ANALYZING THE 2024 SPATIAL PATTERNS IN VOTING BEHAVIOR FOR COMPETING ABORTION MEASURES IN NEBRASKA

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### **Abstract**

*This study begins by examining recent national voting trends related to the Supreme Court's ruling in *Dobbs v. Jackson Women's Health Organization* (2022), further examines Nebraska's abortion debate over the last few decades, and then focuses on the state's vote patterns revealed during the 2024 election cycle. In 2024, Nebraska had two competing ballot measures that addressed abortion, passing Initiative 434 that essentially maintains current restrictions. Spatial analysis for this article focuses on Initiative 434 along with Nebraska's vote patterns for President Donald Trump-R and Senator Pete Ricketts-R. Factor analysis—a data reduction technique—demonstrates that there is not only a strong rural-urban divide but vote patterns also reveal sharp divisions based on demographics, such as, age, employment, ethnicity, income, and population density. Not only did the state see a distinct rural-urban split for Initiative 434 but a similar pattern appeared for both President Donald Trump-R and Senator Pete Ricketts-R as both carried 91 Nebraska counties losing only Douglas and Lancaster. While many states currently have no abortion restrictions or allow the procedure latter in pregnancy, Nebraska remains one of the states that limits abortion twelve weeks after conception.*

**Keywords:** abortion, demographics, political geography, vote patterns

### **Introduction**

Abortion has been, and will most likely remain, not only one of the most controversial political issues, but a moral concern as well. Abortion has been considered in dozens—if not hundreds—of studies and attitudes toward it are often tied to political party affiliation. Annas (2001, 152) agrees and points out that abortion has long been the most “politicized medical procedure in the United States” and it has been the “subject of more state and fed-

eral legislation than all other medical procedures combined.” Adams (1997) adds that nearly 30 years ago, abortion had become a political “game changer” as the two major political parties in the United States have been transformed by the issue as many citizens changed their party identification based on abortion. This affiliation with party has occurred during a time when state and federal funding for abortion services has become more contentious, with many states disallowing providers affiliated

with abortion services to receive state funds for contraception. In another example, Nossiff (2007) analyzed abortion policy from 1965 to 2000 claiming that politics of traditional motherhood often conflict with women's rights to full citizenship and without full access to abortion, women are unable to achieve equality with men. Aiken and Scott (2016) also recognized the "intensity" surrounding abortion as many state legislatures enacted measures "limiting access to family planning." They evaluate voting patterns in the Texas House of Representatives in 2003 and 2011 and note that partisanship does not fully explain vote results on family-planning issues, but it did become stronger over time. More recently, Rolfes-Haase and Swers (2021) analyzed Congressional results from the 103rd (1993-1994) to the 115th (2017-2018) sessions and determined that gender and party affiliation influenced voting behavior as abortion brings distinct differences in vote patterns. Republican women are more likely than Republican men to "defect" on issues related to contraception, while Democrat men are more likely than Democrat women to support legislation involving abortion bans.

This study begins by examining recent national voting trends related to the Supreme Court's ruling in *Dobbs v. Jackson Women's Health Organization* (2022), further examines Nebraska's abortion debate over the last few decades, and then focuses on the state's vote patterns revealed during the 2024 election cycle. Nebraska in 2024 had two competing ballot measures that

addressed abortion, passing Initiative 434 that essentially maintains current restrictions.<sup>1</sup> Spatial analysis for this project focuses on Initiative 434 along with Nebraska's vote patterns for President Donald Trump-R and Senator Pete Ricketts-R. Factor analysis—a data reduction technique—demonstrates that there is not only a strong rural-urban divide but vote patterns also reveal sharp divisions based on demographics, such as, age, employment, ethnicity, income, and population density.

### **Dobbs v. Jackson Women's Health Organization (2022)**

In 2018, Jackson Women's Health Organization—an abortion facility in Mississippi—challenged the constitutionality of the Gestational Age Act in court. The Gestational Age Act prohibited abortions after the 15th week of pregnancy except in cases of medical emergencies or fetal abnormalities. Ultimately, in 2021 the Supreme Court agreed to hear the case and in 2022 found there was no constitutional right to abortion and overruled *Roe v. Wade* (1973) and *Planned Parenthood v. Casey* (1992).

Following the decision that there is no federal constitutional right to abortion, the debate shifted to the state-level (Dinan 2023). Soon after *Dobbs v. Jackson Women's Health Organization*, seven state ballot measures came forward in 2022 and 2023. California, Michigan, Ohio, and Vermont all debated "pro-choice" measures, and all were approved. Kansas, Kentucky, and Montana all considered "pro-life" measures

designed to explicitly state that there is no right to abortion in their respective state constitutions, and all three were defeated. The outcome in Kansas was perhaps the most surprising.

In 2022, Kansas was the first state to hold a statewide vote on the subject since the Supreme Court's ruling in *Dobbs v. Jackson Women's Health Organization* and the amendment sought to eliminate the state's constitutional protections for abortion rights. The proposed amendment failed by a wide margin—59 percent to 41 percent—even in conservative Kansas and the outcome has now been labeled the “Kansas surprise” (Doan 2022). Amos and Middlewood (2024) found that those in support of abortion held a distinct advantage in mobilizing their efforts, focusing on young adults—women in particular. Kansas, as a case study, also points to accessibility considerations between states. Prior to the vote in 2022, 48.9 percent of abortions provided by Kansas clinics were to out-of-state residents—possibly in part to restrictions in neighboring states (Doan 2022).

During the 2024 election cycle, ten states voted on abortion measures (Dorgan 2024; Thoene 2024). Seven—Arizona, Colorado, Maryland, Missouri, Montana, New York, and Nevada—voted to maintain or expand abortion rights while Florida, Nebraska, and South Dakota voted to leave existing restrictions in place (Venegas 2024). In Missouri, voters cleared the way to reverse the state's near total ban on abortion, while in Montana voters decided to “expressly provide a right

to make and carry out decisions about one's own pregnancy, including the right to abortion” (Colton 2024). Arizona voters expanded access to abortion until the 24-week mark, “enshrining a fundamental right” before fetal viability (Colton 2024). Colorado voters supported a right to abortion and to “allow the use of public funds for abortion” and clarified that the state cannot deny health insurance coverage for abortion (Durkee 2024). On the other side, Florida's Governor DeSantis signed the Heartbeat Protection Act in 2023, which limits abortion after six weeks of gestation. The 2024 vote in the Sunshine State meant to overturn that act and the pro-abortion vote on Amendment 4 captured 57 percent of the vote, falling just shy of the 60 percent threshold to amend the state's constitution (Durkee 2024). In similar fashion, South Dakota's Amendment G—even though it captured 58.6 percent of the vote, which would have made abortion a state constitutional right—did not pass. And in Nebraska, the anti-abortion measure (Initiative 434) passed by a slim majority of support (53.8 percent).

Some in the past have questioned the “power” of abortion in driving turnout—especially compared to priority issues such as economic concerns and immigration (Craig et al. 2002). Some 20 years ago now, Roh and Haider-Markel (2003) noted that “national forces” play a role in local and state elections. Those forces include Supreme Court rulings, presidential elections, and activities of interest groups. Roh and Haider-Markel (2003) analyzed results from 16



abortion at fetal viability, and one state restricts abortion in the third trimester.

### **Nebraska's Recent Abortion History and Initiatives 434 and 439**

The United States Supreme Court on June 28, 2000, issued a ruling on *Stenberg v. Carhart*. In that decision, the court in a 5-4 vote found it was “not within the constitutional powers of the state [Nebraska] to enact legislation that bans partial birth abortions or the dilation and extraction procedure” (Annas 2001; Barry 2000). Henderson (2001, 1127) at the time noted that with the *Stenberg v. Carhart* decision the Supreme Court invalidated Nebraska’s “partial-birth” abortion ban and in doing so caused a “public uproar typical of any major decision regarding abortion rights.” A decade later, in 2010, then-Governor Dave Heineman signed a law restricting abortions 20 weeks after conception based on the theory that a fetus can feel pain at that point (Davey 2010). This is important to note as Nebraska became the first in the nation to restrict abortion based on a fetus feeling pain in the mother’s womb—at the time a novel concept in the abortion debate. Part of the Nebraska discussion in 2010 stemmed from Dr. George Tiller’s murder in Wichita, Kansas. Tiller—an abortion provider—often worked with Dr. LeRoy Carhart from Bellevue, Nebraska who at the time planned to continue his practice of performing late-term abortions. Carhart’s proclamation spurred legislators in Nebraska to attempt to curtail the practice in the state. Ultimately, the 2010 legislation that limited

abortions in Nebraska to a 20-week ban passed the Unicameral state legislature by a wide margin (44 to 5). At the time, a leading abortion rights advocate stated that “if some of these other anti-abortion bills have been chipping away at *Roe v. Wade*, this takes an ax to it” (Davey 2010). Cohen and Sayeed (2011) commented that Nebraska’s Pain-Capable Unborn Child Protection Act caught the attention of both sides of the abortion debate as other states followed suit with similar legislation. Nebraska’s statute required abortion-providing physicians to make a determination regarding the age of the unborn child and made it illegal to induce—or at least attempt to perform or induce—an abortion when the probable age is 20 weeks or more unless there is a medical emergency.

Following *Dobbs v. Jackson Women’s Health Organization* (2022), Nebraska became the first and only state to vote on competing abortion measures (Initiatives 434 and 439) on the same ballot since the U.S. Supreme Court overturned *Roe v. Wade* in 2022 (Associated Press 2024; Booth 2024; Sanderford 2024; The Washington Post 2024; Thoene 2024; Vagianos 2024). To achieve “ballot” status in Nebraska, the number of signatures required for a measure is 10 percent of the registered voters. Nebraska also features a distribution clause mandating that petitions contain signatures from 5 percent of the registered voters in two-fifths (38) of the state’s 93 counties, and signatures must be submitted at least four months prior to the next general election. Once submitted, the Secretary of State sends

signature petitions to each county for verification.

In this case, Initiative 439 was filed on November 13, 2023 and 207,000 petition signatures were submitted on July 3, 2024—well beyond the required 136,000. Next, the Secretary of State on August 23, 2024 certified the initiative, noting that at least 5 percent of the registered voters from at least 47 counties had signed the petition. A few months later, Initiative 434 was filed on March 21, 2024 and by July 3 the campaign reported 205,000 ballot signatures. On August 23, 2024, the Secretary of State certified the initiative noting that at least 136,000 signatures had been collected from at least 5 percent of registered voters in 86 counties with strong support in Hooker, Logan, Platte, and Wheeler counties (Figure 2).

Initiative 434 would not necessarily add further restrictions to abortion—currently banned in the second and third trimesters—in Nebraska but making it a constitutional amendment

would make it more difficult to liberalize policy via the state legislature or court rulings. On the other hand, Initiative 439 would have established a state constitutional right to abortion up to fetal viability or when necessary to protect the “health or life” of the pregnant “patient.” If both measures passed, whichever had the most support would have become law (Venegas 2024).

Some question the intent of having competing proposals. Just prior to the election, Booth (2024) claimed that “much of the confusion surrounding the competing proposals is intentional, and likely a preview of new tactics in the evolving anti-abortion playbook.” Searcey (2024), writing for *The New York Times*, agrees and adds that Nebraska with two abortion measures to “choose from means many voters are simply confused” and that “voters are having trouble parsing the wording on ballots as well as mixing up which measure aligns with their views.” Kapur (2024), reporting on Initiative 434 for

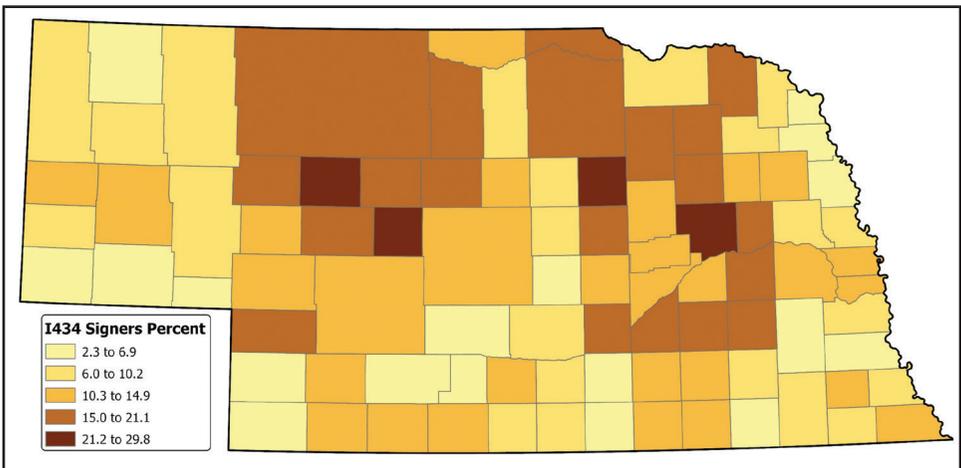


Figure 2: Nebraska I-434 Petition Signers 2024.

*NBC News*, summarizes Nebraska's situation and refers to it as a "novel strategy by anti-abortion advocates" and a "set-back for reproductive rights advocates."

Confusion or not, with competing proposals came financial support from across the nation (Venegas 2024). Searcey (2024) reported that abortion has become the most expensive ballot question in Nebraska's history. Initiative 439 in Nebraska garnered support from a wide range of individuals and groups, including former New York City Mayor Michael Bloomberg, the ACLU of Nebraska, Black in Action Collective, Freedom from Religion Foundation, I Be Black Girl, Nebraska Appleseed, Planned Parenthood Action Fund, Planned Parenthood Advocates of Nebraska, The Fairness Project, and Women's Fund of Omaha. Protect Our Rights, for example, registered as a political action committee (PAC) to support Initiative 439 and at the same time to oppose Initiative 434. Those supporting Initiative 439 donated \$12,935,936.35 and those who opposed Initiative 434 contributed \$7,742,302.32 with total commitments at \$20,678,238.67. Top contributors include New Venture Fund (\$2,000,000), Planned Parenthood Advocates of Nebraska (\$1,507,500), The Fairness Project (\$1,500,000), Michael Bloomberg (\$1,500,000), and Ashlei for Nebraska (\$765,814.96).

Those who opposed Initiative 439 and supported abortion restrictions (Initiative 434) referred to maintaining the 12-week ban already in place as a "commonsense approach" (Rembert 2024). Supporters included both

of Nebraska's senators—Deb Fischer and Pete Ricketts—along with Governor Jim Pillen and several organizations including Common Sense Nebraska, Nebraska Catholic Conference, Nebraska Family Alliance, Nebraska Right to Life, Priests for Life, and Students for Life. Those opposed (Protect Women and Children, for instance) to Initiative 439 raised \$7,742,302.32 with the largest individual support coming from Marlene Ricketts (\$4,000,000), Senator Pete Ricketts (\$1,115,000), Shawn Peed (\$1,050,000), and Common Sense Nebraska (\$245,000).

### **Vote Analysis**

Even in conservative Nebraska, the vote was close on both measures.<sup>2</sup> Polling data, for instance, leading up to the vote (late September to early October) demonstrated a slight advantage for Initiative 439—44 percent support, 40 percent opposition, and 16 percent undecided (Wheaton 2024). Initiative 439—that would have established a right to abortion—ultimately failed by a slim margin—473,652 (51.0 percent) against versus 455,184 (49.0 percent) for. Initiative 434 that does not add further abortion restrictions, but did amend Nebraska's constitution, passed by a slightly larger margin—509,288 (54.9 percent) for and 417,624 (45.1 percent) against (Table 1) (*The Washington Post* 2024). Both 2024 abortion ballot measures and their slim margins are, in part, explained by "decoupling" as many registered voters went against their party platforms. According to the Secretary of State in Nebraska, there were 623,234

**Table 1. Votes cast on competing abortion-related ballot initiatives in Nebraska for the 2024 general election.**

Initiative	For	Against	For (%)	Against (%)	Margin (%)
IM-434	509,288	417,624	54.90%	45.10%	9.90%
IM-439	455,184	473,652	49.00%	51.00%	-2.00%

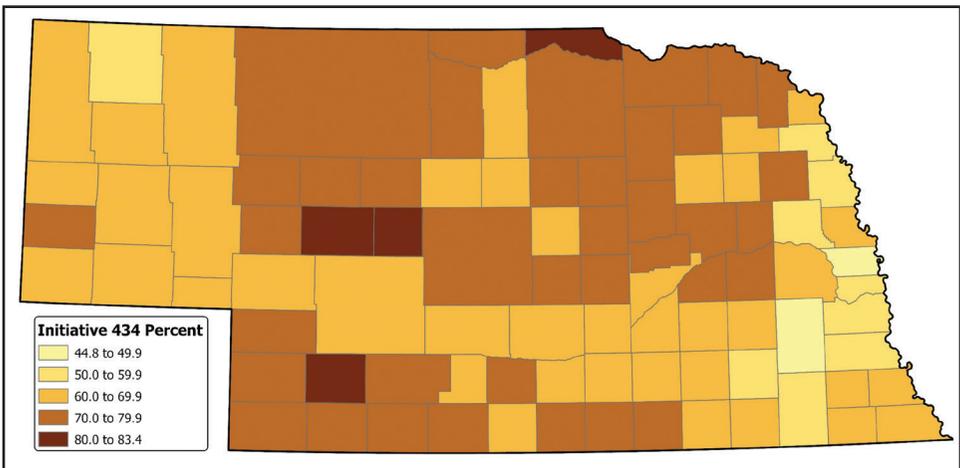
**Table 2. Registered voters in Nebraska for the 2024 general election.**

Republican	Democrat	Nonpartisan	Other	Total
623,234	337,142	274,882	28,229	1,263,487
49.33%	26.68%	21.76%	2.23%	100.00%

(49.33 percent) registered Republicans, 337,142 (26.88 percent) registered Democrats, and 303,111 (23.99 percent) registered Nonpartisan or other parties as of the 2024 general election (Table 2). Party affiliation, however, does not always dictate vote patterns as many apparently broke with the party “line” regarding Initiatives 434 and 439.

Even though vote totals were relatively close, the percent “swing” between counties was measurable. Initiative 434, for example, captured at least 80.0 percent of the votes in Hayes, Keya Paha, Logan, and McPherson counties—an-

other 38 counties supported Initiative 434 with at least 70.0 percent of the vote (Figure 3). On the flip side, two Nebraska counties voted against Initiative 434. Douglas County (Omaha) and Lancaster County (Lincoln) with the state’s two largest metropolitan areas did not support Initiative 434. In this situation, it is important to not view Initiative 434 in isolation but also consider vote patterns for President Donald Trump-R and Senator Pete Ricketts-R. Of Nebraska’s 93 counties, Trump and Ricketts both captured 91 counties losing only Douglas and Lancaster counties—the state’s



**Figure 3: Nebraska Initiative 434 Support 2024.**

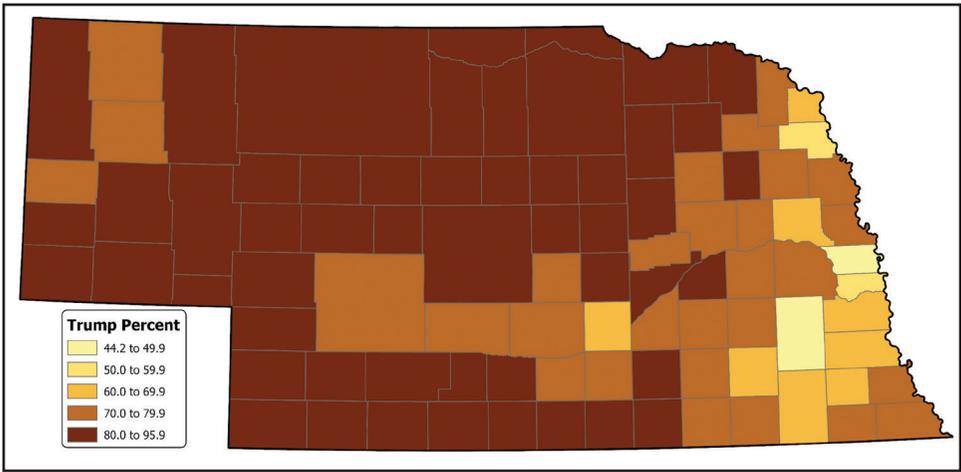


Figure 4: Nebraska Trump Support 2024.

most populated counties (Figures 4-5).<sup>3</sup> Similar to many states, this rural-urban divide is nothing new for Nebraska (Combs et al. 2018; Combs and Burger 2020). Blankenau and Parker (2015) recently noted, for instance, that even though the state is primarily “red,” there is a strong division in Nebraska’s rural to urban citizens when examining social issues, such as, sex education, prayer in school, and gun control (Blankenau and

Parker 2015).

Regression analysis and factor analysis helps to further explain recent vote patterns in Nebraska. In simple terms, regression analysis provides the “nature of the relationship between two variables” (Kachigan 1991, 160). Kachigan (1991, 170) goes on to say that regression analysis is “used to specify and test a functional relationship between variables” and is a “means for evaluat-

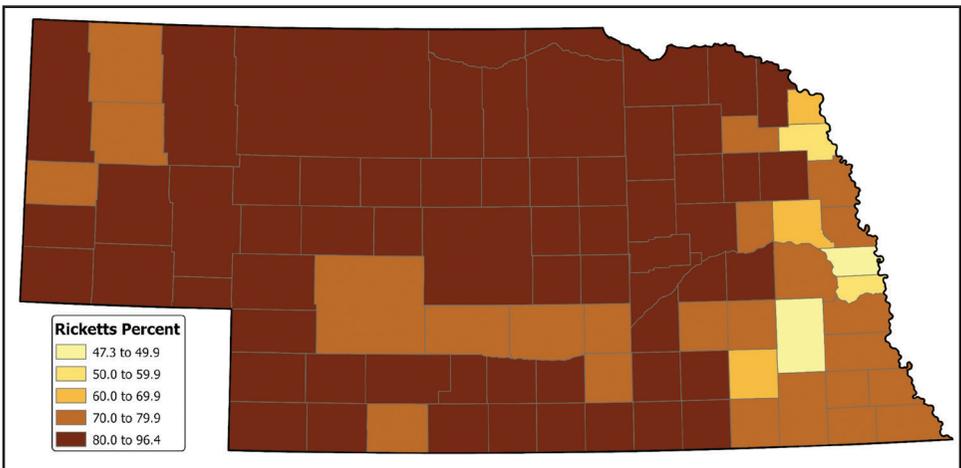


Figure 5: Nebraska Ricketts Support 2024

ing the importance of the variables and the correctness of the model.” Richardson and Fox (1972) used regression analysis to examine, for instance, how religion impacts political behavior and found that religious affiliation was a more powerful predictor of behavior than age, constituency, and party. In another project utilizing regression analysis, Daynes and Tatalovich (1984) also evaluated Congressional voting patterns and noted that party affiliation was a strong determinant, with religion following close behind.

In this particular case, an additional statistical technique is used to determine what factors impacted how Nebraskans voted in 2024. To best do that, factor analysis—a data reduction technique—is employed. Factor analysis groups variables that are highly correlated into “factors,” which represent the shared variance among the variables (Rogerson 2006). Similar studies have also used factor analysis based on socio-demographic variables—age, income, ethnicity, and occupation, for instance—to explain spatial patterns associated with market analysis (Burger and Combs 2011; Burger, Combs, and Bauer 2015). In this study, factor analy-

sis is used to reduce data into a smaller, more manageable set of factors while retaining as much information as possible. The procedure can be thought of as removing the duplicated information from a set of variables or as the grouping of similar variables. County-level demographic data for this study are from ESRI (2024).

At the county-level, stepwise regression identified five significant factors that explain over 50 percent of the support for Initiative 434 and over 60 percent of the support for Trump-R and Ricketts-R (Table 3). The five factors are the *inverse* of conservative, pro-life supporters who supported Initiative 434, President Trump, and Senator Ricketts (Factors 6 and 7 were not statistically significant and are excluded from discussion). Factor 1, for example, represents minorities and highly diverse populations, a reliance on manufacturing jobs, and an absence of older males and females (70-74) (Table 4). Factor 3 points to young adults (15-24), females in their late twenties (25-29), those who are not married, and is absent older males and females over 55 in age except for the aforementioned 70-74 cohort. Factor 4 relates to those with profes-

*Table 3. Adjusted R<sup>2</sup> contributions of significant factors in the 2024 Nebraska general election regression models.*

<b>Significant Factors</b>	<b>IM-434</b>	<b>Trump</b>	<b>Ricketts</b>
<b>Factor 1</b>	4.90%	13.30%	12.50%
<b>Factor 3</b>	9.00%	12.90%	12.30%
<b>Factor 4</b>	22.70%	18.90%	20.20%
<b>Factor 5</b>	8.90%	9.70%	9.40%
<b>Factor 8</b>	5.20%	7.80%	6.60%
<b>Total</b>	50.60%	62.60%	61.00%

**Table 4. Component variables for significant factors in the 2024 Nebraska general election regression analysis.**

Factor 1	Factor 3	Factor 4	Factor 5	Factor 8
Minority Populations	Young Adults 15 to 24	Professional Technical	Unemployed	Health Care
Diverse Populations	Females 25 to 29	High Population Density		Health Support
Manufacturing	Never Married	HH Income 200K Plus		Health Practices
Absent Ages 70 to 74	Absent Ages 55 to 69	Computer & Mathematical		Absent Agriculture
		Business & Financial		
		Females 30 to 34		

sional tech jobs, higher population densities, those with higher household incomes (\$200k+), computer, business, and financial occupations, and females 30-34. Factor 5 indicates those who are currently unemployed and Factor 8 represents those who are in the health-care arena and not in agriculture and/or farming occupations.

**Summary**

During the 2024 election cycle, ten states voted on abortion measures and Nebraska was one of them. Of the states considering abortion, Nebraska became the first to contend with competing measures on the same ballot—Initiative 434 and Initiative 439. Both measures received widespread support, with much support for Initiative 439 (and against Initiative 434) from out of state sources. Initiative 434 ultimately passed with interesting vote patterns. Initiative 434 garnered at least 80.0 percent of the votes in Hayes, Keya Paha, Logan, and McPherson counties—another 38 counties supported Initiative 434 with at least 70.0 percent of the vote—yet two counties (Douglas and Lancaster) voted against the measure. Not only did the state see a distinct rural-urban split for Initiative 434 but a similar pattern appeared for both President Donald

Trump-R and Senator Pete Ricketts-R as both carried 91 Nebraska counties losing only Douglas and Lancaster. Factor analysis was first utilized to group related variables and reduce redundancy, subsequently, regression analysis identified those that were significant in explaining the spatial patterns of support for Initiative 434, President Trump, and Senator Ricketts. The five explanatory factors appear as the *inverse* of conservative, pro-life supporters in Nebraska who supported Initiative 434. Recognizing the increasing politicization of abortion and understanding the financial interests involved, it is likely that Nebraska—along with states across the country—will continue to wrestle with the issue in upcoming elections. While many states currently have no abortion restrictions or allow the procedure later in pregnancy, Nebraska remains one of the states that limits abortion 12 weeks after conception. How long the current constitutional amendment will stand—and how future ballot initiatives may, in turn, reshape Nebraska’s spatial patterns of voting—remains to be seen.

## **NOTES**

1. According to *Ballotpedia* (2024), from 1970 to November 2022 there were 53 abortion-related ballot measures and 43 (81 percent) had the support of organizations that described themselves as pro-life. Voters approved a mere 11 (26 percent) and rejected 32 (74 percent) of these measures. The other ten abortion-related measures had support from organizations that described themselves as pro-choice or pro-reproductive rights. For those, voters approved seven (70 percent) and rejected three (30 percent).

2. Booth (2024) contends that if both constitutional amendments had passed, it would have been the first time since 1912 that the law citing competing amendments would have gone to the one with the most votes.

3. Senator Deb Fischer-R was also re-elected in 2024 defeating Dan Osborn-I, winning every Nebraska county except for Sarpy and Thurston counties in addition to Douglas and Lancaster.

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## GEOGRAPHIC PATTERNS OF CANCER MORTALITY IN BERKS COUNTY MUNICIPALITIES

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### Abstract

*Cancer deaths for all the municipalities in Berks County were obtained from the Pennsylvania Department of Health. These data were used to calculate age-adjusted mortality rates for all cancers, male and female cancers, and lung cancer for two time periods: 2004-2013 and 2014-2023. The highest age-adjusted rates occurred in boroughs, while low rates were more common in townships. Male and female rates were correlated at statistically significant levels, with the female rates lower than the male rates. Lung cancer rates mirrored those of all cancers, although several small towns with high rates for all cancers had low rates. A Mann-Whitney test confirmed that boroughs had statistically higher rates than townships.*

**Keywords:** Berks County, municipalities, cancer mortality, lung cancer, age-adjusted rates, z-scores, boroughs, townships

### Introduction

Several notable attempts have been made to find a cure for cancer. An early effort was President Nixon's "War on Cancer" which led to the passage of the National Cancer Act of 1971 with the hope for a cure by the nation's bicentennial in 1976 (Surh 2021). The newly created National Cancer Institute (NCI) coordinated these efforts. Most oncologists were skeptical, but not the director of NCI, who in 2005 declared the goal of "eliminating the suffering and death due to cancer by 2015" (von Eschenbach 2005). Skepticism continued. President Obama's State of the Union Address in 2015 challenged the medical community to cure cancer "once and for all" (Greaves 2016). Then-Vice President Biden was charged with developing a new effort that he called the Cancer Moonshot (The White House 2016).

What did the nation benefit from the billions of dollars invested in research? Between 1991 and 2021 (the 50th anniversary of the original Nixon "war"), the overall cancer death rate declined by 33%, saving at least 4.1 million lives (American Association for Cancer Research 2024). That is the good news. Unfortunately, the American Cancer Society estimates that slightly more than two million new cases and 618,000 deaths will occur nationwide in 2025. In Pennsylvania, the comparable numbers are 90,000 new cases and 27,500 deaths (American Cancer Society 2025).

Federal cancer policy is primarily focused on research and is sponsored by the NCI. State cancer policy, by contrast, address state, county, and local cancer problems, such as concern for elevated rates. Historically, the most common scale of investigation has been the county. The first nationwide publi-

cation, in 1975, by the NCI was entitled “An Atlas of Cancer Mortality in U.S. Counties: 1950-1969.” Many atlases and studies at this level followed, and they provided a general perspective. But within counties, there can be widely varying rates of cancer. Thus, there is a need to understand the internal spatial variation of mortality to select places for targeted interventions.

The purpose of this paper is to examine the geographic pattern of cancer mortality rates for the municipalities of Berks County from 2004 to 2023, the latest year data are available. For this descriptive study, three questions will be addressed: 1) What is the geographic distribution of cancer mortality in Berks County municipalities? 2) Does the pattern of cancer mortality differ by gender? 3) Does the pattern of lung cancer mortality differ from that of all cancers? The reason for the selection of lung cancer is discussed below. Berks County was chosen as the focus of this study as another component of my continuing interest in building a more comprehensive understanding of the county’s health systems, and this study will add to previous work on lead, asthma, and toxic pollutants (Ziegenfus 2018, 2019, 2020, 2022). A specific interest will be to determine if there are differences in cancer mortality rates between boroughs and townships, as was the case in Lehigh and Northampton counties (Ziegenfus 1993). Therefore, the City of Reading is excluded from the analysis. Below is an explanation of the data sources and the mortality rate calculations.

## **Data Sources and Methodology**

The data for this study come from two sources. Cancer data was provided by the Pennsylvania Department of Health (DOH) for 18 age groups for all cancer deaths in Berks County as well as separately for males and females. Only values larger than 16 deaths for any municipality were included in rate calculations to adhere to the Centers for Disease Control (CDC) rule for data suppression to preserve confidentiality (CDC 2024). Given the small total population of many boroughs and rural townships in Berks County and to minimize the impact of the 16 deaths rule, the data were aggregated into two time periods: 2004-2013 and 2014-2023. Nevertheless, six municipalities did not experience 16 deaths in either period for all cancers.

The other source of data was the American Community Survey (ACS) of the Bureau of the Census. Population values for each municipality were extracted in non-overlapping five-year intervals to match the cancer data. Then, the 2019-2023 data were merged with the 2014-2018 data to form the 2014-2023 time span identified above. Five-year data for 2009-2013 were available, although not for 2004-2008, as the ACS did not produce values for 2004 and 2005. There was a 2006-2010 data set, but the years 2009-2010 would be duplicated by the 2009-2013 data. The optimum solution was to adjust the 2006-2010 data to only reflect 2006-2008 and merge it with 2009-2013.

A basic mortality rate is calculated with two variables: the number of deaths

as the numerator and the population at risk as the denominator. This number is then multiplied by the convention of 100,000 to avoid extremely small values. Such a rate could be calculated for any age if the number of deaths in that age group and the population of that age group are known. For example, five deaths in a community of 5,000 people equals a mortality rate of 10/100,000.

When calculated for a specific age group, the result is designated as an age-specific mortality rate. To compare municipalities, however, a calculation is required for each of the standard five-year age groups from 0-5 to 85+, and then sum all 18 values to obtain a total mortality rate. The problem that would arise in comparing one municipal rate with others is that each municipality has a unique age structure. One method to create comparable numbers is to multiply all the age-specific rates by a standard vector. A standard vector is a known age structure, and its use will allow comparison with any similarly calculated rate. The final number is designated as an age-adjusted rate (AAR). The standard vector used by the DOH, as well as in this study, is the age distribution of the United States in 2000. AARs were calculated for the 68 municipalities that had more than 16 cancer deaths in each of the two ten-year periods. Extremely high AARs will be reported as a Z-score, a value that indicates the number of standard deviations between a rate and the mean of the distribution. A Z-score larger than 2.58 represents a rate beyond the 99th percentile of the distribution. All corre-

lations were calculated using the Spearman Correlation procedure in SPSS. A Mann-Whitney test was used to determine if there were statistically significant differences between boroughs and townships.

### Analysis

There is little identifiable literature on cancer mortality at the municipal level. Najem et al. (1985) examined cancer mortality in the largest municipalities in New Jersey to find a concentration of the highest rates in the northeastern part of the state, the location of the highest concentration of population and industry. A study in Puerto Rico calculated distinct levels of socioeconomic status (SES) and found that the mortality rate for men did not vary geographically, but for women, the rates were lower in the lowest SES places. A critical limitation of this study is that it used only three years of data (Torres-Cintron et al. 2012). There were significant gender differences in the spatial pattern of lung cancer mortality in Spanish municipalities, with high male rates concentrated along the southwest coast while female rates were lower and more homogenous across the country (Lopez-Abente et al. 2014). The most relevant study is "Cancer in Lehigh Valley Communities: An Example of Applied Medical Geography" (Ziegenfus 1993). In that paper, the highest cancer rates occurred in small towns. Berks County has numerous small towns. Will the same conclusion apply here, even though the timeframe is decades later? The paucity of papers at the mu-

nicipal scale may be due to the methodological issues stated in the previous section. That is, the difficulty in finding sufficient data at the municipal scale to calculate rates, determining an appropriate timeframe, and matching rates to population data. Three recent papers about cancer in Pennsylvania appear in the literature, but all focus on incidence data (the number of new cases during a specified period) at scales other than the municipality (Wang et al. 2017, Zhu et al. 2020, Camina et al. 2022).

The percentages of deaths from cancer in Berks County are declining, as shown in Table 1. Male percentages exceed female percentages. Because of the unique time periods used in this study there are no direct comparisons, but for the 2019-2023 span, the percentage of deaths due to cancer in Pennsylvania was 18.9% (DOH 2025b). A side note is that cancer was the leading cause of death for only the 45-64 age group in Pennsylvania in 2020 (DOH 2023).

As a prelude to the detailed municipal data, Table 2 provides a perspective on the AAR for cancer for Pennsylvania and Berks County by four intervals. The DOH data dissemination system does not provide ten-year calculations that would match the two time periods of the municipal data. Berks County has a lower AAR in all four intervals, perhaps because of its location in the southeastern part of the state with its greater concentration of health care resources. At the national level, cancer accounted for 20% of all deaths, and the leading cause for men 60-79 and women 40-79 (Siegel et al. 2025). Also notable is that the

**Table 1: Percent cancer deaths of all deaths in Berks County. Source: Pennsylvania Department of Health and author's calculations.**

	Deaths	% Cancer
All 2004-2013	35,929	22.6
All Male 2004-2013	17,630	24
All Female 2004-2013	18,299	21.3
All 2014-2023	41,785	20.3
All Male 2014-2023	21,366	21.3
All Female 2014-2023	20,419	19.2

**Table 2: AAR for all cancers for Pennsylvania and Berks County. Source: Pennsylvania Department of Health and author's calculations.**

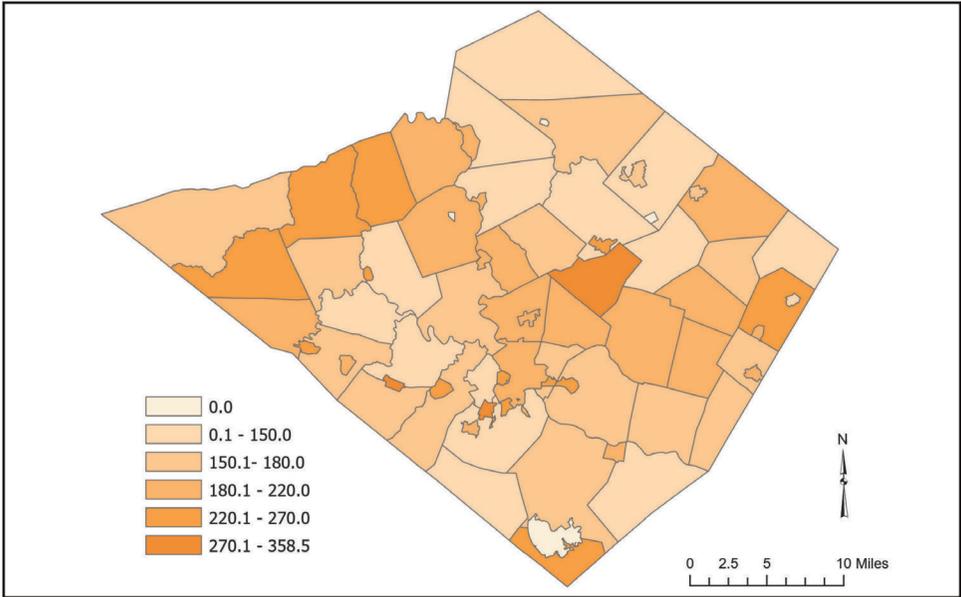
Interval	Pennsylvania	Berks County
2004-2008	193.1	181.2
2009-2013	176.7	162.7
2014-2018	163.2	159.8
2019-2023	151.1	146

rates are trending downward: Pennsylvania's rate decreased by 21.8% and the county by 19.4% in 20 years. These data confirm, at least for Pennsylvania and Berks County, a continued decrease in cancer rates of 20% between 1980 and 2014 (National Cancer Institute 2017).

The municipal data will be analyzed via maps. Four maps for each of the two time spans will be utilized to portray all cancers, male cancers, female cancers, and lung cancer. Each map has a class designated as zero to identify the places with fewer than 16 deaths. Class limits were derived by the Jenks method in ArcGIS Pro with modifications to enhance readability.

**Cancer Rates 2004-2013**

Figure 1 shows the AAR for all cancers for the first period. The mean of



**Figure 1: Age-adjusted mortality rates for all cancers: 2004-2013.**

all 68 rates is 197.5. (See Table 3 for the mean AAR for the two intervals with the number of municipalities meeting or exceeding 16 deaths.) Thus, the places depicted by the two darkest colors exceed this value. Of these, ten are boroughs, most of which are aligned in an east-west direction in the south-southwest of the county. Two of these had the highest rates, with the 358.5 maximum value equal to a Z-score of 3.3, a value beyond the 99th percentile. Therefore, this is an extremely rare rate.

**Table 3: AAR for two intervals for Berks County municipalities. Source: Pennsylvania Department of Health and author’s calculations.**

	2004-2013	2014-2023
All Cancers	197.5 (68)	170.0 (68)
Male Cancer	108.8 (61)	94.7 (62)
Female Cancer	93.9 (57)	80.3 (58)
Lung Cancer	57.7 (39)	40.0 (44)

Another seven boroughs appear in the middle class for a total of 17 boroughs above the mean of the 23 boroughs in the county. Only six townships appear in the top two classes. By contrast, there is only one borough in the first class that includes 12 townships that cluster in the northern and southwestern parts of the county.

Male cancer rates appear in Figure 2. The mean of the 61 municipalities is 108.8. Once again, there were more boroughs than townships (13 vs 10) in the top two classes and only one borough in the lowest class. Boroughs above the mean appear in the same linear pattern in the south-southwest. Yet, the highest male rate is in Upper Tulpehocken Township (in the northwest) with a Z-score of 3.0, another exceedingly rare value. There is no specific clustering of low-rate townships as there was for all

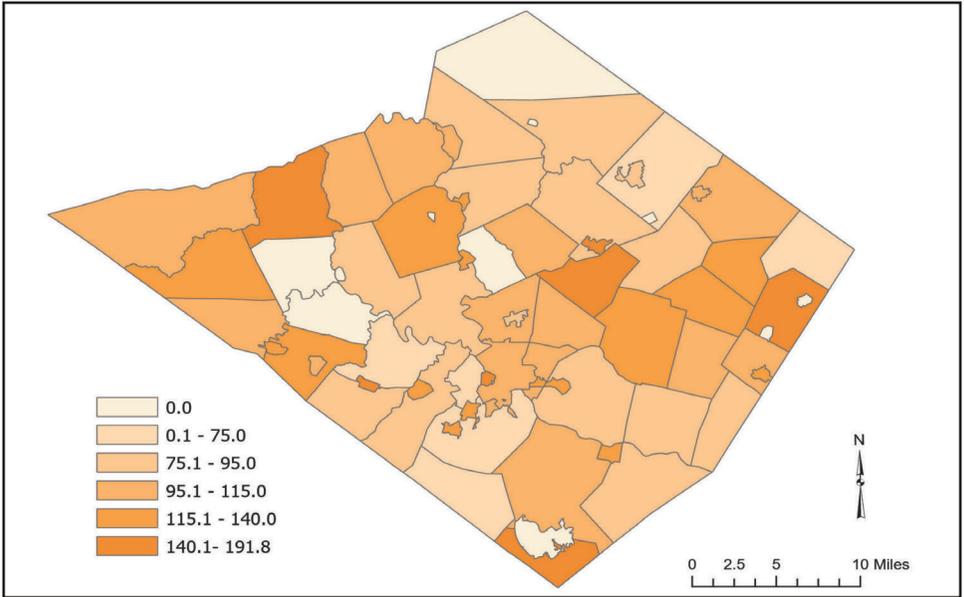


Figure 2: Age-adjusted mortality rates for male cancers: 2004-2013.

cancers.

Rates for female cancers appear in Figure 3. Fifty-seven of the 68 places had 16 or more deaths. The most

apparent feature, consistent with the state data (Pennsylvania Department of Health 2019) is the much lower rates compared to males, as revealed by the

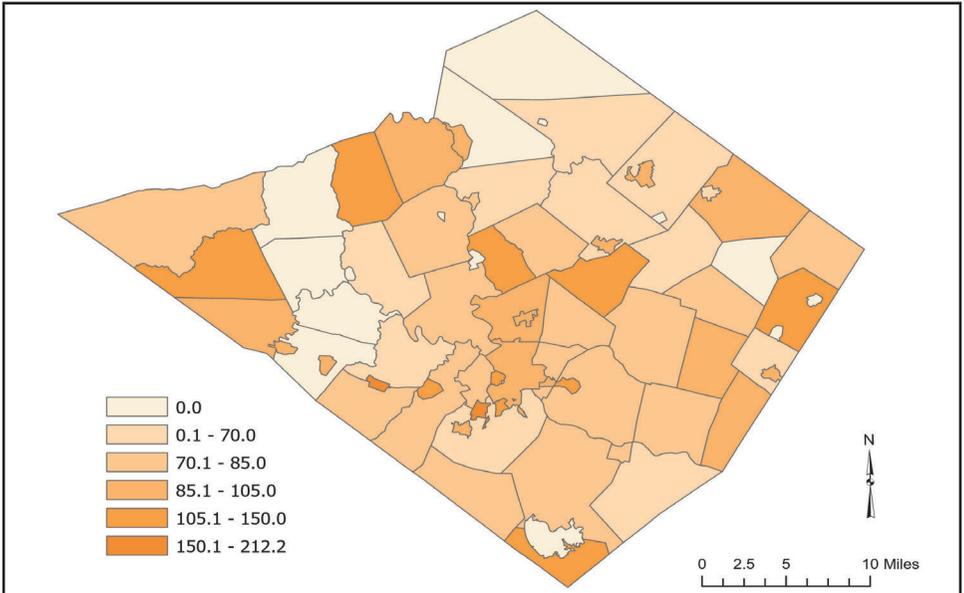


Figure 3: Age-adjusted mortality rates for female cancers: 2004-2013.

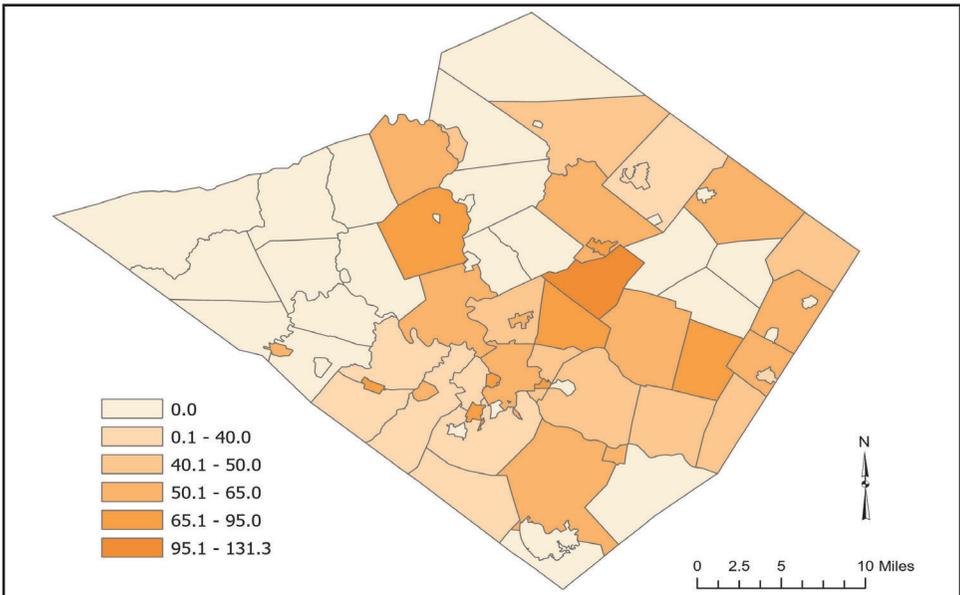
values in the class limits. Thirteen boroughs and 12 townships were above the mean of 93.9. Two of the highest rates are in the same boroughs that were the highest for all cancers. Shillington's rate of 212.2 equals a Z-score of 4.0, and Wernersville's rate of 170.2 is a Z-score of 2.6. Both boroughs are in the string of boroughs in the south-southwest. A cluster of five townships in the north had rates lower than 70. In the second class, another contiguous grouping of 12 townships and three boroughs forms a U-shaped pattern in the east, southeast, and west-central parts of the county.

DOH lists lung cancer as the type with the most deaths every year since 2000. In 2022, there were 6,161 lung cancer deaths, 2.7 times more than 2,200 colorectal deaths (Pennsylvania Department of Health 2025a). Table 4 lists the number and percentages of deaths due

**Table 4: Table 4. Lung cancer deaths in Berks County. Source: Pennsylvania Department of Health and author's calculations.**

	Deaths	% Lung
All Cancer 2004-2013	8,132	26.1
All Male Cancer 2004-2013	4,238	28.3
All Female Cancer 2004-2013	3,894	23.8
All Cancer 2014-2023	8,483	23.8
All Male Cancer 2014-2023	4,553	24.6
All Female Cancer 2014-2023	3,930	22.9

to lung cancer for Berks County. All the percentages have decreased, with the male values decreasing more than the female percentages, thus narrowing the historic gap. Still, one-fifth of all cancer deaths are lung-related. Figure 4 shows the context for Berks County municipalities. Fortunately, 29 places did not have 16 or more deaths. The remaining 39 municipalities create little discernible pattern. One might conjecture that there is a low-rate cluster of five townships and one borough in the southwest, and



**Figure 4: Age-adjusted mortality rates for lung cancer: 2004-2013.**

four contiguous townships of slightly higher rates in the southeast. Ruscombmanor Township, near the center of the county, had the highest rate of 131.1, a Z-score of 3.7. A key gender distinction is that male lung cancer rates could only be calculated for 21 places (mean rate of 35.2), and a mere 12 (mean rate of 30.1) for women, because of the data restrictions described above.

### Cancer Rates 2014-2023

Figure 5 depicts the rate for all cancers for 2014-2023. It has a different pattern than Figure 1, as confirmed by the lack of a statistically significant correlation ( $p=.251$ ) between the two time periods. Besides the lower rates (170.0 vs 197.5), two contrasts are evident. First, several townships in the north are now above the mean. Second, more of the small towns (i.e., boroughs) in the northern half of the map are in a higher

class. Seven boroughs constitute all the places in the top two classes, and seven more are above the mean in the third class. The single most dramatic change is Ruscombmanor Township, located near the center of the map. It had one of the highest rates at 317.0 in 2004-2013 and now one of the lowest at 117.5, a 62.9% decrease. This is instructive about rate variability. A huge decrease in the AAR occurred even though the township had eight more deaths in 2014-2023. What generated the lower rate was an increase in population of 1,275 that yielded a larger denominator. Thus, population dynamics over the 20 years of data may be at least a partial explanation for the difference in the rates in Figures 5 and 1. This, and other factors, will be explored in another study. Bernville Borough, in the west-central part of the county, had the maximum value of 434.4, a Z-score

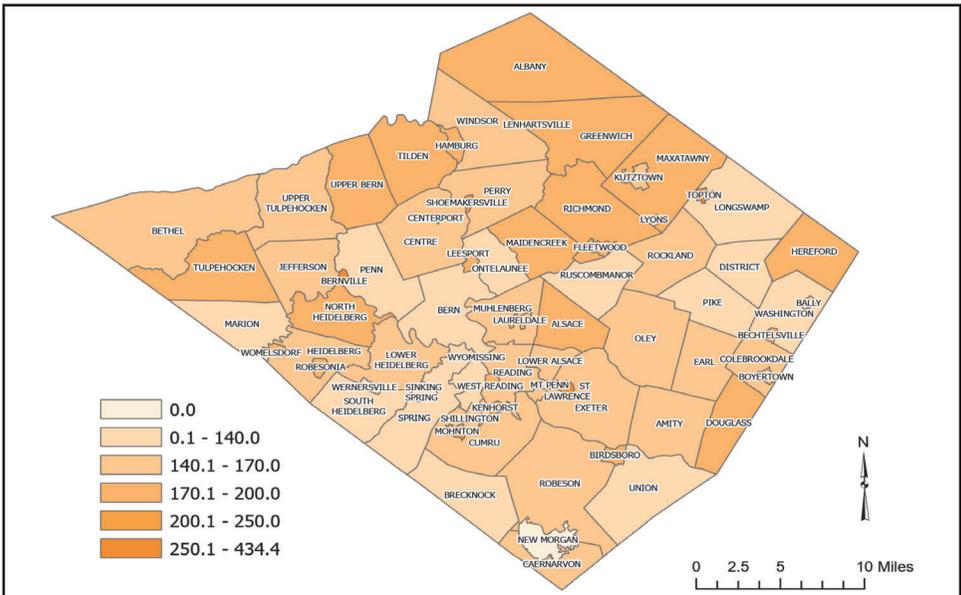
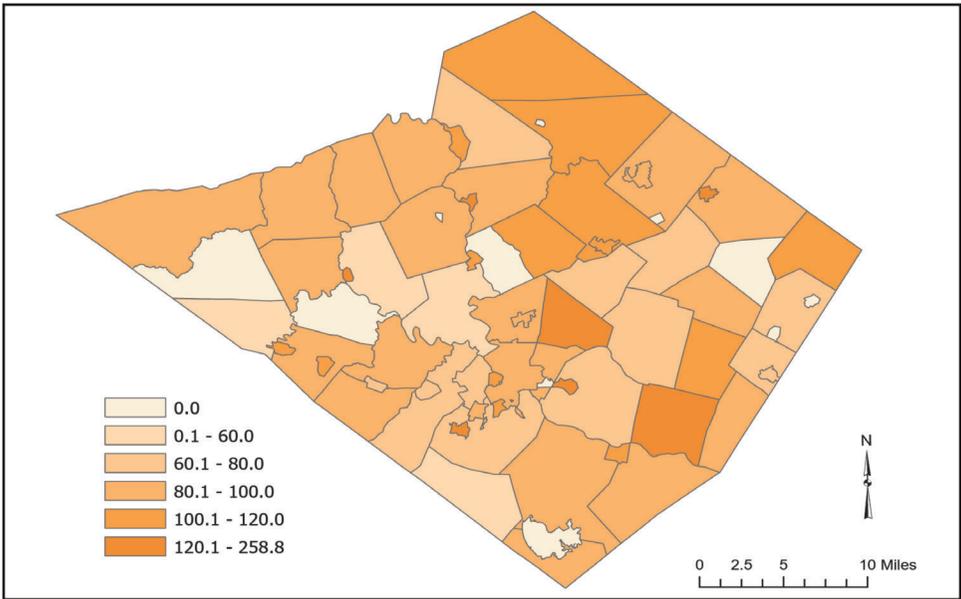


Figure 5: Age-adjusted mortality rates for all cancers: 2014-2023.



**Figure 6: Age-adjusted mortality rates for male cancers: 2014-2023.**

of 4.7. The two other highest values were also small towns, and both had rates that equaled a Z-score above 3.0.

Figure 6 and Figure 2, maps for male rates, have the closest correlation of the two gender pairs ( $p=.057$ ). Since Figure 6 is a subset of Figure 5, it reflects two of the dominant characteristics of Figure 5. Namely, the concentration of high-rate townships in the northern and central areas and the elevated rates in many small towns in the north and south-central areas. All the municipalities in the top class are small towns, and six more appear in the fourth class. Bernville Borough, once again, had the highest rate of 258.8 (Z-score of 5.2, the maximum in this study). There is no contiguous cluster of the lowest rates.

Even a cursory glance at Figures 7 and 3, maps for female rates, conveys the dramatic difference between the

two. The reversal of values in the north is the most obvious difference. Formerly low-rate townships are now relatively high-rate places. One common feature is the string of small towns in the south and southeast with high rates. If the lowest rate places are combined with places that had less than 16 deaths, there is a contiguous cluster of eight townships and three boroughs in the west and five townships and two boroughs in the east. Nevertheless, boroughs remain the highest rate places—all three in the top class and five of the seven places in the next highest class. Topton Borough in the northeast corner had the maximum value of 199.6 (Z-score 4.3).

Figures 8 and 4 display rates for lung cancer, and even though there is a direct correlation, it is not statistically significant ( $p=.27$ ). Twenty-four places did not meet the confidential-

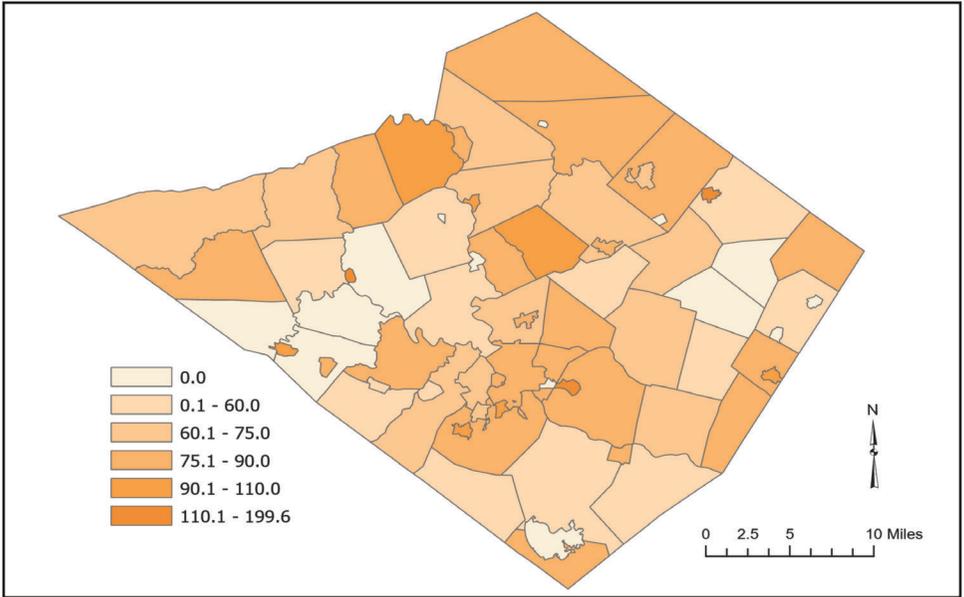


Figure 7: Age-adjusted mortality rates for female cancers: 2014-2023.

ity requirement of 16 deaths. These 24, combined with several low-rate places, form a large contiguous cluster in the western half of the map. Almost all the

higher rate places are in the eastern half, including the small town of Toppington, as above, with the largest value of 76.7 (Z-score of 4.3). There is, however,

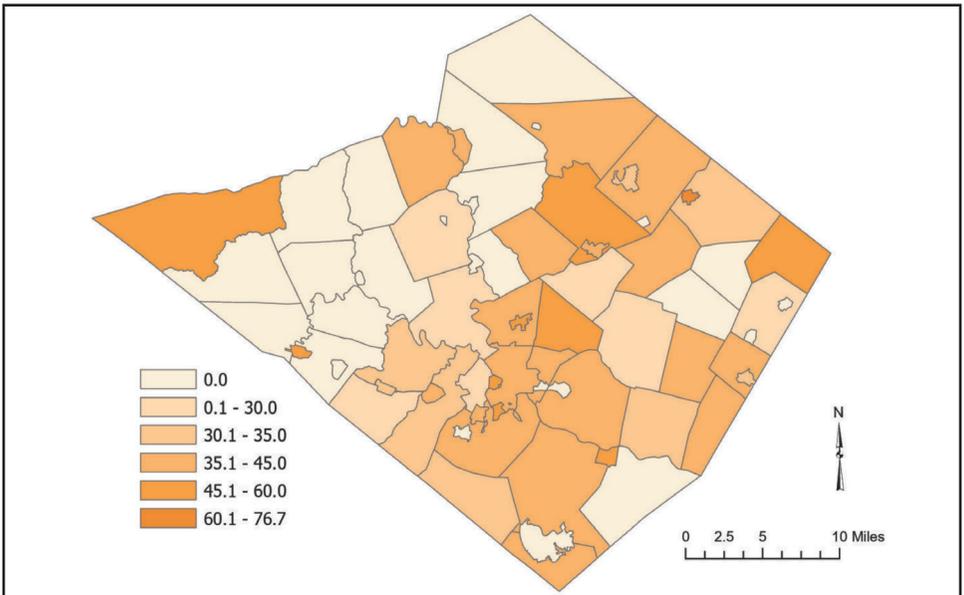


Figure 8: Age-adjusted mortality rates for lung cancer: 2014-2023.

a more equitable distribution of high rates among boroughs and townships than on any other map. Only 20 places (mean of 24.0) had calculable male rates, while 11 places (mean of 19.1) had female rates. By comparison to the first time period, these rates represent a 31.8% decrease for males, while females decreased 33.2%. This is a substantial change, most likely the result of the overall decrease in cancer as shown in Table 3.

The map patterns identified above reveal a predominance of boroughs with larger AARs than townships. To confirm that boroughs have higher rates, a Mann-Whitney test was calculated (see Table 5). There was a statistically significant ( $p < .05$ ) difference in every cancer category except lung in 2004-2013. Further evidence of the distinction between boroughs and townships is that the correlation coefficient between population density and AARs is statistically significant well beyond  $p = .05$  for all cancers, male cancers, female cancers, and lung cancer, except lung cancer in 2004-2013. Moreover, there were no statistically significant differences, as calculated by the MW test, within the boroughs and within the townships for 2004-2013 and within the townships

for 2014-2023. Boroughs did evidence statistically significant differences for all cancers, male cancers, female cancers, and lung cancer in 2014-2023. The statistically significant differences occurred because the smallest population boroughs had a larger mean rank than the larger population boroughs.

**Summary and Conclusions**

Three questions were posed in the Introduction. Question 1: What is the geographic distribution of cancer mortality in Berks County municipalities? The two maps of all cancers (Figures 1 and 5) showed that most of the high-rate places were boroughs. Their distribution changed with a greater concentration in the initial period in the south-southwest, whereas the second time period had a lesser, though still considerable, concentration there and joined by other small towns in the north. Townships, too, had a changing pattern. In 2004-2013, several of the higher values were in the west, and in 2014-2023, several more in the north had similar values. Low-rate townships were most common in the southwest on both maps. Nationwide, rural cancer rates are higher than urban rates (Bhatia et al. 2022). In Berks County, townships in the north, northwest, and southeast are rural, but several adjacent to Reading are urban. Overall, the CDC designates Berks County as urban in its State Cancer Profiles (Centers for Disease Control 2025).

Some of the changeability in small towns is because of a decrease in the number of deaths. Case in point is Wer-

*Table 5: Mann-Whitney test results for boroughs and townships. Source: Pennsylvania Department of Health and author's calculations.*

	2004-2013	2014-2023
All Cancers	p = .001	p = .001
Male Cancer	p = .004	p = .001
Female Cancer	p = .002	p = .016
Lung Cancer	p = .083	p = .024

nersville Borough. It had the highest AAR in 2004-2013 of 358.5 based on 133 cancer deaths, whereas in 2014-2023, with 63 fewer deaths and an increase in population of 1591, it had a rate of 125.5. Bernville Borough had a more modest change with an increase from 245.3 to the highest value of all places at 434.4 in 2014-2023, based on an additional 11 deaths with a small population increase of 248 persons. A small change in the number of deaths, combined with an increase or decrease in population, can change an AAR dramatically in small towns, as was discussed above in the case of Ruscombmanor Township.

Question 2: Does the pattern of cancer mortality differ by gender? In both time periods, the correlation of male rates and female rates is positive and statistically significant ( $p=.001$ ). Despite this finding, the maps do not appear to have similar patterns except for the predominance of small towns with high AARs in the south-southwest. Another similarity in 2004-2013 is the presence of low-rate townships in the north and a few in the west. The pattern for both genders changes in 2014-2023 as the formerly low-rate places in the north are now high-rate places. This spatial reversal will require additional scrutiny. One gender distinction is the greater number of low-rate places on the maps of female cancers. Similar to this study, a national study found that male rates exceed female rates (Singh et al. 2011).

Question 3: Does the pattern of lung cancer mortality differ from that of all cancers? A constraint to offer an un-

qualified answer is the reduced number of places that experienced more than 16 deaths (see Table 3). Once again, there is a positive statistically significant correlation of .75 ( $p=.001$ ) in both time periods between the rates for lung cancer and all cancers. Since the former is a subset of the latter, it is logical that the pattern would be similar. Thus, the elevated rates in small towns are present in both instances. What is unexpected is the number of small towns with low rates scattered across the county. In this case, one can conclude that other cancers are driving high rates for all cancers. Perhaps colorectal and/or pancreatic deaths may be responsible because both are the next most common type of cancers in Pennsylvania.

What remains unknown is what might be contributing to, or associated with, the rates reported herein. As this was the first exploratory examination of the county's cancer rates, it was descriptive by nature. An examination of potential risk factors (e.g., education and income) is planned as the next step in understanding Berks County's municipal cancer rates, especially the finding that there may be a general leveling of lung cancer rates in the county. Advanced statistical techniques, such as regression and factor analysis, will be applied where appropriate, especially to understand the small-town versus township contrasts identified herein.

### **Disclaimer**

Data were provided by the Pennsylvania Department of Health. The Department specifically disclaims respon-

sibility for any analyses, interpretations or conclusions.

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## BOOK REVIEWS

### **The 15-minute city: A solution to saving our time and our planet**

Carlos Moreno

Wiley, 2024, xxi plus 252 pp. plus Afterword and Index. ISBN 9781394228140 (cloth), 9781394228157 (ePub), 9781394228164 (Epdf).

Reviewed by **Christopher Briem**, Urban and Regional Analysis Program, University Center for Social and Urban Research, University of Pittsburgh.

In 1939, the American Institute of Planners sponsored an indelible documentary intended to extol the virtues of community planning in an era when suburbanization was accelerating. Narrated by none other than Louis Mumford, and accompanied by a soundtrack composed by Aaron Copland, the resulting 45-minute documentary waxed lopsidedly about bucolic suburban living to the point of being a declaration of war on the evils of density and virtually calling for an end to cities. That dour prognosis dominated American policies toward cities through the subsequent half-century, only facing serious resistance in the most recent decades. Today, public debates over density have centered around visions for or against creating a *15-minute city*.

What has pushed back on the image of dystopian city living has been the emergence of planning imperatives centered around sustainability in urban living: proximity to essential services and amenities, shortened commutes, and decreased dependence on automobiles.

In 2015, Franco-Columbian scientist Carlos Moreno coined the phrase “Ville du quart d’heure,” or “15-minute city,” at the United Nations Climate Change Conference in Paris. The phrase has come to symbolize the panoply of policies worldwide aimed at promoting density, the antithesis of the dedensification advocated 75 years earlier. His 2024 book of eponymous title is a compilation of the history, philosophies, and global policies promoting density in urban planning. Moreno expounds on the “proximity revolution” as he puts it, or the concept of “chrono-urbanism,” which contrasts the level of quality of life with the time spent commuting each day, especially by car.

Moreno did not create the core concepts advocated for in the book, nor was he the first to popularize them in the modern era. Many of the pro-density ideas echo those of new urbanism, emphasizing walkability and human-centered design, and they have roots much further back in history. The book appropriately spends much of the first several chapters walking through the historic debates over urban density from Le Corbusier to Jane Jacobs. But Moreno compiles a global synthesis of the current debates over density. While assaults on urban living are sometimes seen as a predominantly American obsession, the bulk of the book is focused on case studies from Paris to Melbourne, as well as from Cleveland to Portland.

The book is about the here and now, and what the immediate future holds for cities and how we think about

them. Throughout the book, Moreno addresses the rapid expansion of teleworking, and the final full chapter is a brief discussion of how ever-changing digital technologies impact urban development. Included there is a pitch for a participatory educational tool he developed called a *fresk*, in this case it is his *proximities fresk*, which is an awareness-raising workshop tool focused on urban and regional quality of life.

While introducing few new concepts unto itself, the book provides a primer for the public on how policies and philosophies about urban density have evolved, and are currently evolving, around the world. It is also not a comprehensive exegesis of the policies promoting density. There is little mention of emergent criticisms of the application of the *15-minute city*-related policies, which include questions about a lack of appreciation for housing issues and potential gentrification impacts, among others. This is Moreno making his case.

Nonetheless, Moreno has popularized a debate that deserves greater attention at all levels. His personal explanation in book form provides virtually a primary source to understand the emergence of the *15-minute city* vision over the last decade. The book would benefit economic development professionals, especially those focused on urban redevelopment. It could also be a valuable complement to either an advanced undergraduate or early graduate course intended to link academic research with how urban policies are playing out in case studies around the world.

## **Water: A critical introduction**

Katie Meehan, Naho Mirumachi, Alex Loftus, and Majed Akhter

Wiley Blackwell, 2023, 304 pp., bibliography, index. Print \$38.95 ISBN 9781119315216, E-book \$31.00 ISBN 9781119315162.

Reviewed by **Brian Okey**, Emeritus, Anthropology, Geospatial and Earth Sciences Department, Indiana University of Pennsylvania.

Over many years of teaching the upper-level university course “Geography of Freshwater Resources,” the decision regarding whether to require a course text repeatedly confronted me. Several books did an admirable job presenting elements of hydrology, aquatic biology, resource economics, law, and other components of water resource issues, but I invariably opted to assign a custom packet of readings culled from different sources. *Principles of water resources: History, development, management, and policy* by Cech came very close to meeting my needs as a stand-alone work. *Water: A critical introduction* presents an additional option with which to contextualize the growing demands and friction over regional and global fresh waters. It draws from a political ecological perspective and utilizes case studies from both Western post-industrial and non-Western settings framed within the “hydrosocial cycle.” It leans more heavily toward the political than the ecological, and surpasses Cech in the depth of its treatment of social equitability as a key concern; I am un-

aware of works with a similar purpose for use in an undergraduate setting.

The “hydrosocial cycle”—comprising the inseparable relationships between water and society—is shaped by, for example, colonial and neoliberal ideologies as well as underlying physical determinants, ultimately resulting in varying access to water among social groups. Chapter 1 contrasts this with the traditional hydrological cycle, which the book argues has historically been treated by scientists in a manner decoupled from humans. The authors then proceed to lay out the four foundations of the text that: power over water is produced through scientific discourse, scarcity is a product of social relations, water has value beyond quantification in economic or legal terms, and the struggle for social justice involving water is ongoing. At the end of this chapter, and each of the others, a useful, thematically organized bibliography is provided.

Chapter 2, titled “Water and Empire,” begins with the first of a few fictional references to Frank Herbert’s *Dune* as a means of introducing the geopolitics of water. For a near-future vision closer to home, I highly recommend Paolo Bacigalupi’s *The water knife*. Written prior to the Hamas attack of October 7, 2023, the text here draws on Israeli-occupied Palestine, among other examples, in highlighting the results of settler colonialism (Albanese 2024). The subsequent chapters of the “Foundations” portion of the book address water and law (Chapter 3) and the commodification of water by big business (Chapter 4). Neoliberal ideology

and policy are critiqued, along with the paradox of laissez faire water markets created in Chile and elsewhere through the intervention of legal and government institutions applying principles espoused by economists of the University of Chicago. Riparian and prior appropriation systems of water rights are reviewed, with focus on the western U.S. and Australia and implications for indigenous groups; more attention might have been given here to the potentially powerful yet largely unrealized senior use rights of some Native American tribes in the Colorado River Basin (Smith et al. 2022). Arguments for and against water privatization are presented, with emphasis on the United Kingdom context and reference to the Thames River Basin (a recurring example throughout the book). This section lacks discussion of the fundamental infrastructural elements and investment by a public or private entity required in the collection, treatment, and provision of water services.

The second portion of the book, “Big Waters” (Chapters 5-7), focuses on broad scale economic uses of water and political implications of large dams and other regional scale initiatives. Agriculture, encompassing the largest share of “virtual water” consumed in various production processes, is connected by the authors to land acquisitions by Western governments and foreign investors; these ultimately lead to hegemonic control in Africa and other parts of the Global South. Extensive use of water for irrigation can shortchange hydrological functions that maintain wa-

ter quality, threatening “basin closure” for major rivers. Among other topics of concern highlighted in Chapter 5 are shifts of water from rural to urban areas; while the tone of the discussion is sympathetic to farmers, some mention of the case of federal water subsidies to agricultural enterprises in the western U.S. and water banking initiatives in southern California would add further nuance. The chapter is firmly focused on economic and political power relations, with only vague reference to “environmental flows,” “ecological relations,” or other environmental attributes worthy of protection. Some mention of specific details or examples of water quality concerns would have been useful. Chapter 6 “Dam Fever” explores the institutional impetus to construct large dam projects, from New Deal era showpieces to more recent initiatives undertaken by India and China. I was a bit surprised that the authors did not mention the diminishing viability of hydroelectric projects arising from climate change; climate-related alterations in river flow are identified as a general concern in the final chapter, however.

In Chapter 7, “Shared Waters,” the authors eschew direct connections between resource scarcity and potential for violent conflict as other writers have warned (Homer-Dixon 1999; Klare 2001). Rather, scarcity and social conflict are presented as symptomatic of institutional root causes of inequality and crisis. Transboundary waters are reviewed along with cooperative instruments which oversee them, such as the “Agreement on the Cooperation for the

Sustainable Development of the Mekong Basin.” The authors downplay the strategic and/or symbolic significance of water bodies to state entities, and there is no reference to the exhaustive chronology of water and conflict maintained by the Pacific Institute ([pacinst.org/water-conflict-chronology](http://pacinst.org/water-conflict-chronology)) and mentioned in texts by Cech and others.

Arguably the most distinct, and timely, contribution of the book is material found in Section 3. It considers fundamental connections of water to humans as a right and addresses philosophies and international movements recognizing the right to water. Chapter 8 explores inequities of water infrastructure and access evident by the latter 20th century, accompanying political trends such as austerity measures, privatization of public services, and underlying racial and gender divisions in society. The case of Flint, Michigan, figures prominently in this discussion. The road toward enshrining human needs for water as rights is covered in Chapter 9. Globally, this process has moved forward in the United Nations, while at the national level, South Africa has played a pioneering role. Although a vote to declare water and sanitation a human right passed the UN General Assembly, the profit-seeking role of the private sector remains unchallenged—an outcome which has continued to receive criticism from social justice activists. More recently, the extension of rights beyond humans to natural water bodies has become a serious topic. The final chapter, “Future Waters,” reviews the limitations of technocratic solutions, however

well-intentioned or “green,” and argues the need for participatory approaches, shared benefits, and respect for traditional knowledge.

Prior to finishing this review, I had the opportunity to visit Tonle Sap Lake in Cambodia, one of the examples discussed by the authors. Chapter 7 does a good job presenting the hydrological, economic, and institutional context surrounding Southeast Asia’s largest freshwater body, home to floating fishing villages which I observed on my trip, and which are currently in jeopardy (Althor 2018). Elsewhere in the book, physical and ecological influences and impacts were underemphasized. A further criticism is the lack of quantitative or qualitative analytical tools presented. Regardless, *Water: a critical introduction* is a valuable contribution to the body of text literature available to instructors teaching about freshwater resources; its usefulness will vary according to the thematic and regional focus of specific courses. This work succeeds in providing an overview of political economic and political ecological themes tied to water, and in challenging the social outcomes of historic processes, conventional development approaches, and environmental management theories, using well-chosen and globally significant case examples.

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**Framing nature: The creation of an American icon at the Grand Canyon**

Yolanda Youngs

Lincoln, University of Nebraska Press. 2024. 377 pp., 130 Figures, 3 Appendices, References, Index. \$35. ISBN: 9781496202185 (paperback).

Reviewed by **Matthew Ramspott**, Department of Physical and Environmental Sciences, Frostburg State University.

The Grand Canyon holds a special place in the collective imagination drawing millions of visitors annually from the United States and abroad. This unique and storied place is the setting for Yolanda Youngs' timely and engaging book. Youngs (Professor of Geography and Environmental Studies at California State University, San Bernardino) develops an extension of personal experience and years of research centered on visual impressions associated with this iconic American landscape. The Grand Canyon, its discovery and early exploration, its profound geological origins, its significance in the development and expansion of the United States national park system, and its influence on attitudes about scenic beauty and outdoor recreation, has been extensively documented before. In that sense, Youngs' ambitious project has a tremendous amount of material on which to build as well as lofty standards to live up to. This book offers an insightful overview of an extensive body of scholarship in the context of the ways popular imagery has shaped perceptions of what the Grand Canyon represents.

Deeper understanding is needed of how the public assigns intrinsic value to wildlands and preserved open spaces because of urgent questions about the disposition of public lands in the United States and the priorities of the Federal government in managing parks and wildlands. Youngs' book addresses this need with a perspective firmly rooted in the history of how the Canyon came to be the celebrated place that it is today. Parks and preserves, especially at this grand scale, do not occur by accident. They emerge from complex compromises among diverse interests with sometimes divergent goals: extraction of strategic resources, promotion of tourism and economic development, preservation of natural history and cultural heritage, recreation, and physical or spiritual renewal. The book's scope is specific to the Greater Grand Canyon Region but with implications for the future of public lands everywhere in the United States. This work harbors added significance when viewed through the lens of the recent national zeitgeist, characterized by disorienting upheaval of norms and expectations surrounding segments of national policy including environmental protections, forest management, public investment, and countless others.

A detailed introductory section outlines the conceptual and methodological context, followed by nine distinct chapters, grouped into three main parts: 1) Finding the Grand Canyon; 2) Creating the Grand Canyon; and 3) Framing the View. The narrative culminates with a short conclusion followed

by three appendices presenting data and additional context supporting an analysis of historical visual materials consisting primarily of archival collections of postcard imagery produced by commercial entities and images from the popular magazine *Arizona Highways* (first published in early form in 1921, and still successful today). This impressive archive of visual material is leveraged to investigate the enduring power of imagery for tracking historical trends in cultural constructs and values connected to the place itself.

Most people who visit the Grand Canyon find themselves awed and humbled by what they discover. Youngs develops insights that propel us to contemplate our own Canyon experiences in new contexts. One example is the contrast between the experience of most modern visitors; i.e., scenic viewpoints situated along the most developed stretch of the park at the South Rim, against the far less common adventures to be found within the inner canyon, either via river rafting or rim-to-river hiking expeditions. Another is the profound way in which the mid-20th century expansion of travel by automobile has transformed perceptions, expectations, and understandings of the landscape with all its interconnected elements. Youngs guides readers on a wonderfully illustrated journey through this history of cultural associations, from the vast impassable desolation encountered by early Spanish colonists to the inspiring scenic grandeur sought by visitors today. Themes of environmental policy and management, cul-

tural heritage preservation, regional economic planning, tourism development, and the long-term sustainability of conservation and preservation efforts are all covered. She explores this territory acknowledging that exclusion of indigenous groups has historically been a component of the establishment of wilderness parks. For examples of this aspect of the Grand Canyon story, consider the Havasupai people evicted from portions of their ancestral lands located within the national park while also experiencing commodification of their ancestral culture for the gratification of visitors.

Readers interested in the technical history of popular imagery production and dissemination will find significant details concerning image capture and selection, the advent of color imagery, content modification (through photo editing, colorization, and retouching), and ways in which shifting cultural values impacted the market for certain subjects and themes. For readers interested in visual culture analysis, Youngs' research is framed within this realm too; the concept of an "iconographic arc" lends purpose and structure to the narrative. Starting from the first known maps and sketches made by early visitors to the Canyon, the story is then connected to the broad progression of American history with the embedded concept of "The West" and Manifest Destiny therein, the subsequent commercialization of vacation travel and popularization of adventure excursions, and, more recently, the emergent awareness of environmental ethics. Examples

include public reaction to iconic 19th century images by Friedrich Egloffstein, Thomas Moran, Clarence Dutton, Timothy O'Sullivan. Then Youngs explains the popularization of postcards beginning in the early 20th century and the continued public appetite for imagery of the canyon in modern times drawing linkages between popular imagery content and the evolving cultural embrace of a place that might otherwise be seen as vacant of meaning and value or, worse, as a place to be feared and avoided.

Parts of this vital visual history revolve around the successful early commercial interests that had a stake in the development and promotion of the Grand Canyon as scenic commodity: the Santa Fe Railroad, which enabled the first widespread access to the canyon's South Rim, and the Fred Harvey company, a business centered around hospitality and concessions. The intertwining of national park development planning with the interests of favored business enterprises dates to the beginning of the modern national park system in the early 20th century and is exemplified within the Grand Canyon story. The complex politics and economics at work include the strategic directive of the National Park Service to exert limits on private development while also fostering accessible, comfortable, affordable, and memorable experiences. The latter part of the book explores the era of dam building in the mid-20th century that transformed the river within the Canyon from its wild natural state to a more tightly managed system. This section

also explores public sentiment, which flourished in the late 20th century, for the preservation of intact wilderness lands, with increasing value placed on indigenous flora and fauna, and affording visitors rare sanctuary from modern mechanization.

Currently the United States is re-evaluating its national commitment to conserving natural resources and public lands amidst shifting political, economic and environmental challenges. Contentious debates have coalesced around divergent priorities such as maintenance of public lands as part of the national commons versus privatization to exploit these lands for economic gains. With *Framing nature*, Youngs has produced a thoughtful and thorough account of the popularization of one particularly iconic example of wild American landscape: the Grand Canyon. The recent destruction by wildfire (in July 2025) of the historic and acclaimed Grand Canyon lodge, situated in the isolated and sparsely developed North Rim section of the national park, underscores some important questions at hand. What value do we ascribe to the preservation of such wild and wonderful places, and how will we continue to exercise sound management and support public investments to protect this priceless heritage for posterity? Don Lago (2015, 83) aptly points out the "hopeless contradiction" embodied in a 1903 speech at the canyon's South Rim by notable parks and wildlands advocate Theodore Roosevelt, who posited that every American should endeavor to visit the Grand Canyon but urged also

that the canyon should be left unmarred by the vulgarity of human impact.

Public lands are a legacy of the visionaries who championed their establishment and protection. Without sustained public support wildland preservation in the United States would be in a very precarious position. Public consciousness, shaped by organized advocacy and informed political constituency, is crucial for the continued success of celebrated parks and wilderness areas. People are less apt to care deeply about places unknown to them. Recog-

nition of meaning and value in these special places, particularly by those who may not experience them firsthand, is of utmost importance. The relevance of Youngs' approach is exemplified by the drive to learn how meaning and value can be forged and strengthened through the shared experience of popular visual representations.

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**Kelsey Hull** recently finished her B.S. degree in geoenvironmental science and is completing her Masters in the Department of Geography and Earth Science at Shippensburg University.

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Submit your manuscript and all associated files via email. Articles should be sent to Ola Johansson (johans@pitt.edu), Editor, *The Pennsylvania Geographer*. Manuscripts are accepted on a rolling basis. If you are interested in reviewing a book, please contact Donald Buckwalter, Urban and Regional Analysis Program, University of Pittsburgh (DonaldsGeog1954@outlook.com).

To be considered for publication, manuscripts must conform to the following requirements:

1. Articles of any length will be considered. Book and software reviews should be approximately 2-3 pages in length. Manuscripts should use double line spacing with adequate margins. Please only use a single space between sentences. To aid in the revision process, please insert page numbers on all of the pages. The manuscript text should be submitted as a Word (.doc or .docx) file. ***Please do not insert figures, tables or diagrams directly into the manuscript (see below).***
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3. Citation of references must conform to the style found in current issues of the AAGs Professional Geographer. Use parenthetical notation of author and date in the text, and provide complete citation of sources at the conclusion of the article, titled: Literature Cited. Do not use footnotes. If you choose to include endnotes, use the superscript function in Word, not the endnote function.
4. Figures and photos can be in color or black and white. Images should be a minimum of 300 dpi resolution and in .jpg format. Graphs and tables may also be submitted as an Excel (.xls or .xlsx) file with the original data. ***Ideally, figures and tables should be submitted in format such that they fit within a single column (2½" wide) or a double column (5" wide).*** Be sure all text is black in color. Graphs and tables should use large fonts. All tables should use Arial fonts. The editors reserve the right to modify the images and tables as needed to conform to the journal's formatting standards. Each figure, diagram and/or table should be submitted as a separate file. Each file should be named with the lead author's name followed by the figure or table number. For example: "Zaprowski\_Fig-1.jpg" or "Zaprowski\_Table-1.xls"
5. Figure and Table captions should be submitted as a separate Word file using the lead author's name (e.g., Zaprowski\_Figure\_captions.doc)
6. Copies of all manuscripts, maps, photos, etc. should be kept by the author before mailing. Manuscripts, maps, charts, photos, and other illustrations will not be returned. PGS assumes no responsibility for loss or damage of materials sent to the editors.
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