

Mapping the Digital Divide in St. Joseph County, Indiana

Introduction

In the contemporary digital landscape, consistent and reliable internet access is indispensable for engaging in essential activities such as education, work, and civic participation. Yet, disparities persist, particularly in regions like St. Joseph County, Indiana—a post-industrial area characterized by its diverse urban and rural compositions, encompassing cities like South Bend, Mishawaka, and Granger. St. Joseph County, home to the esteemed University of Notre Dame, presents a unique juxtaposition of academic excellence adjacent to communities grappling with economic challenges and elevated poverty levels, which exacerbate the digital divide. A 2022 BroadbandNow report underscores that approximately 40 million Americans do not have broadband internet, essential for modern connectivity. In St. Joseph County, this divide is vividly apparent (Figure 1); despite South Bend's well-developed internet infrastructure, an alarming number of residences lack an internet subscription (Figure 2). A 2019 Pew Research Center survey supports this, revealing that 50% of non-subscribing households cite expense as the main barrier to broadband access. To examine this disparity further, this study delves into the spatial distribution of internet connectivity within St. Joseph County to elucidate the correlation between internet access, income levels and race/ethnicity.

Research Questions

1. How do income levels and racial/ethnic demographics correlate with internet access across St. Joseph County, and what do these patterns indicate about underlying social and economic inequalities?
2. Which regions within St. Joseph County exhibit the most significant disparities in internet access, and how can these findings inform targeted policy interventions to enhance broadband infrastructure and affordability?

Methodology

Data

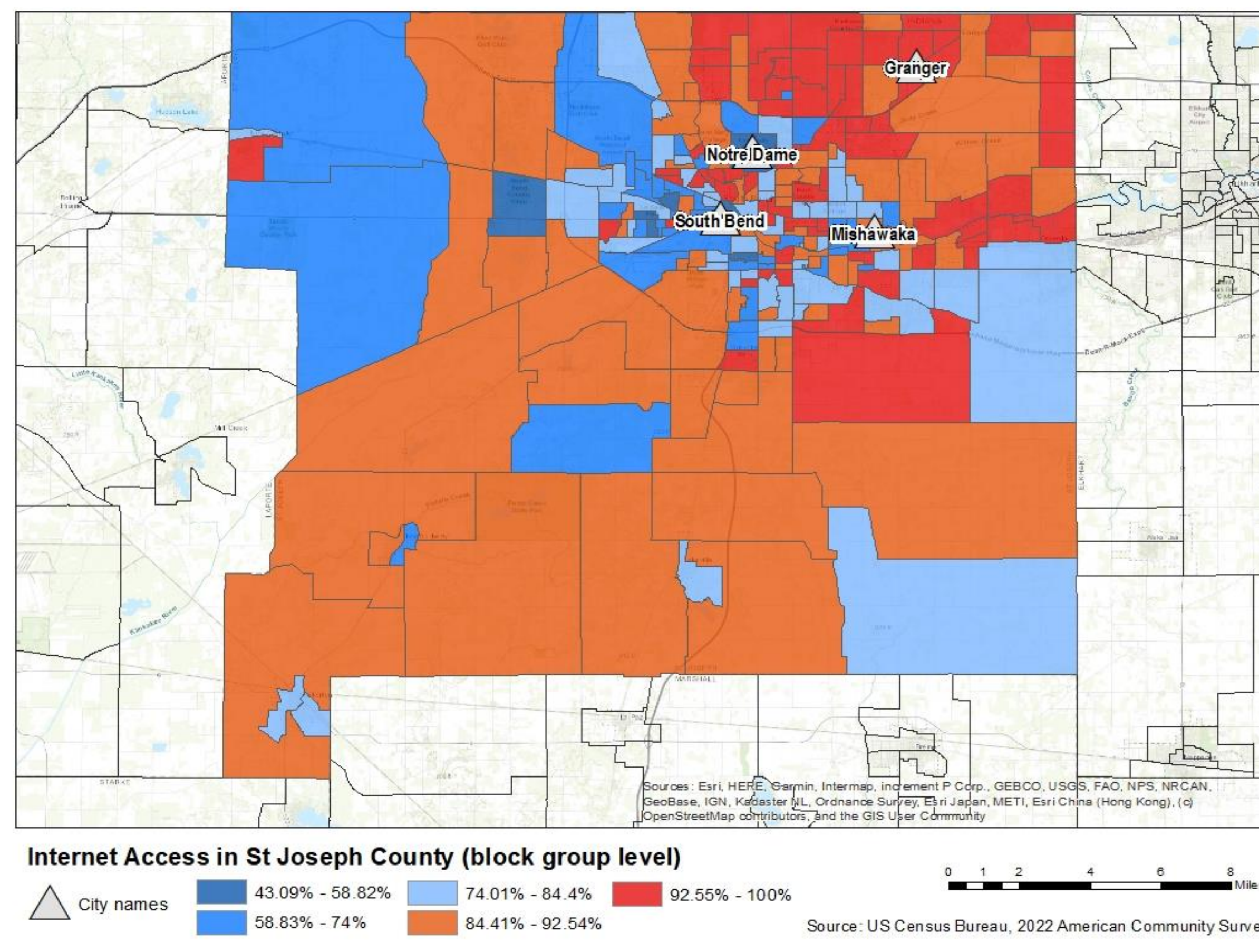
This study uses 2022 American Community Survey (ACS) 5-year estimate data from the U.S. Census Bureau, analyzing around 336 block groups in St. Joseph County, Indiana. The key variables—internet access, income levels, and race/ethnicity—are crucial for examining the distribution of digital resources.

Methods

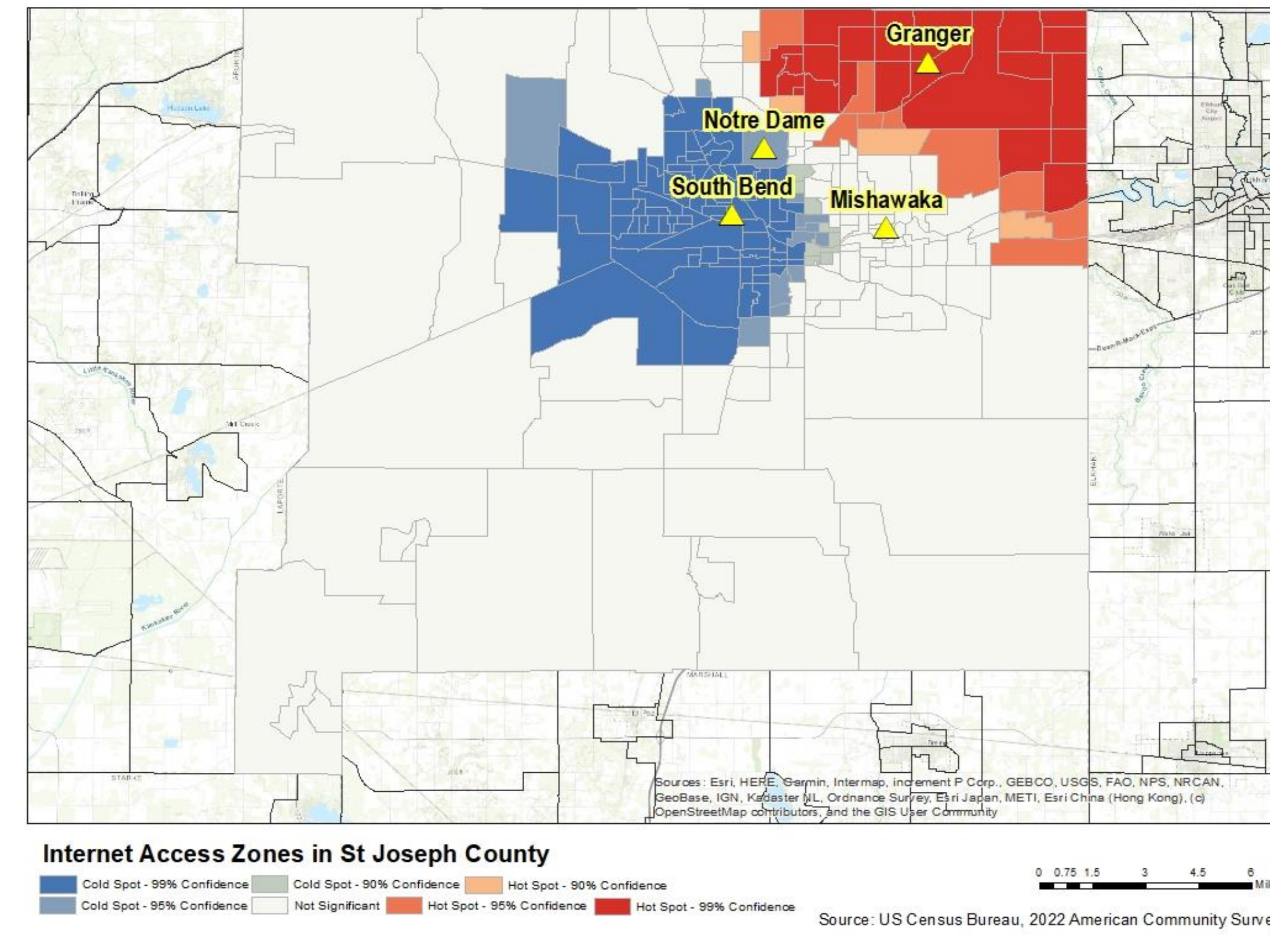
Geospatial and statistical analyses were conducted to identify patterns of internet connectivity and their correlation with socioeconomic factors:

1. Choropleth Maps (Figure 1): Visualize internet access variations across different block groups to highlight areas with varying levels of broadband penetration.
2. Hotspot Analysis (Figure 2): Identifies clusters of high and low internet connectivity, pinpointing areas requiring targeted interventions.
3. Dot Density and Proportional Symbol Maps (Figures 3 and 4): Illustrate demographic distributions and income levels, showing how these factors correlate with internet access disparities.
4. Correlation Analysis: Performed in Stata, this analysis assessed the relationships between internet access and socioeconomic variables. Scatterplots (Graph 1 and Graph 2) were created to visually demonstrate the positive correlations, providing insight into the strength and nature of these relationships.

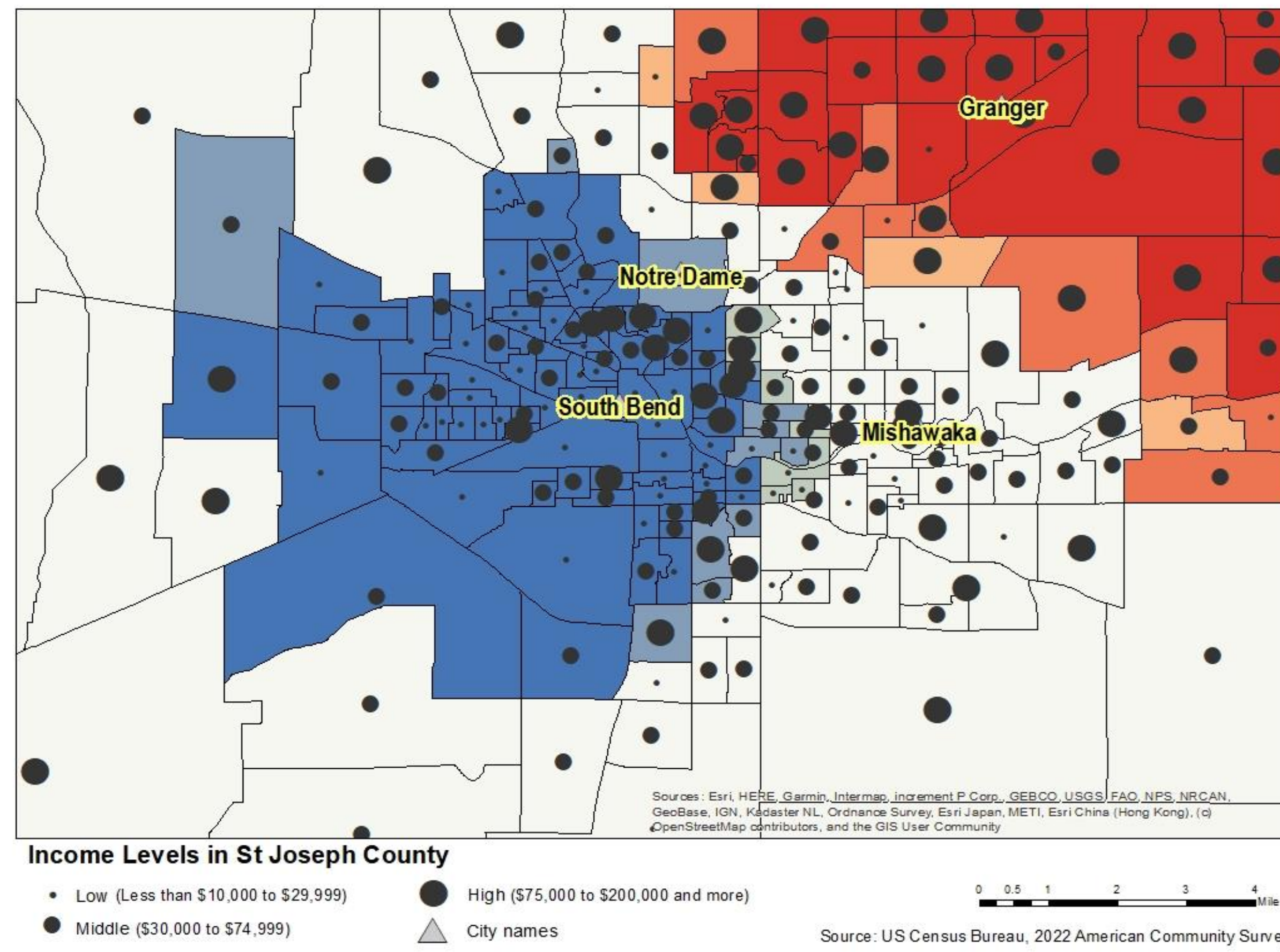
Map 1: Internet access per block group



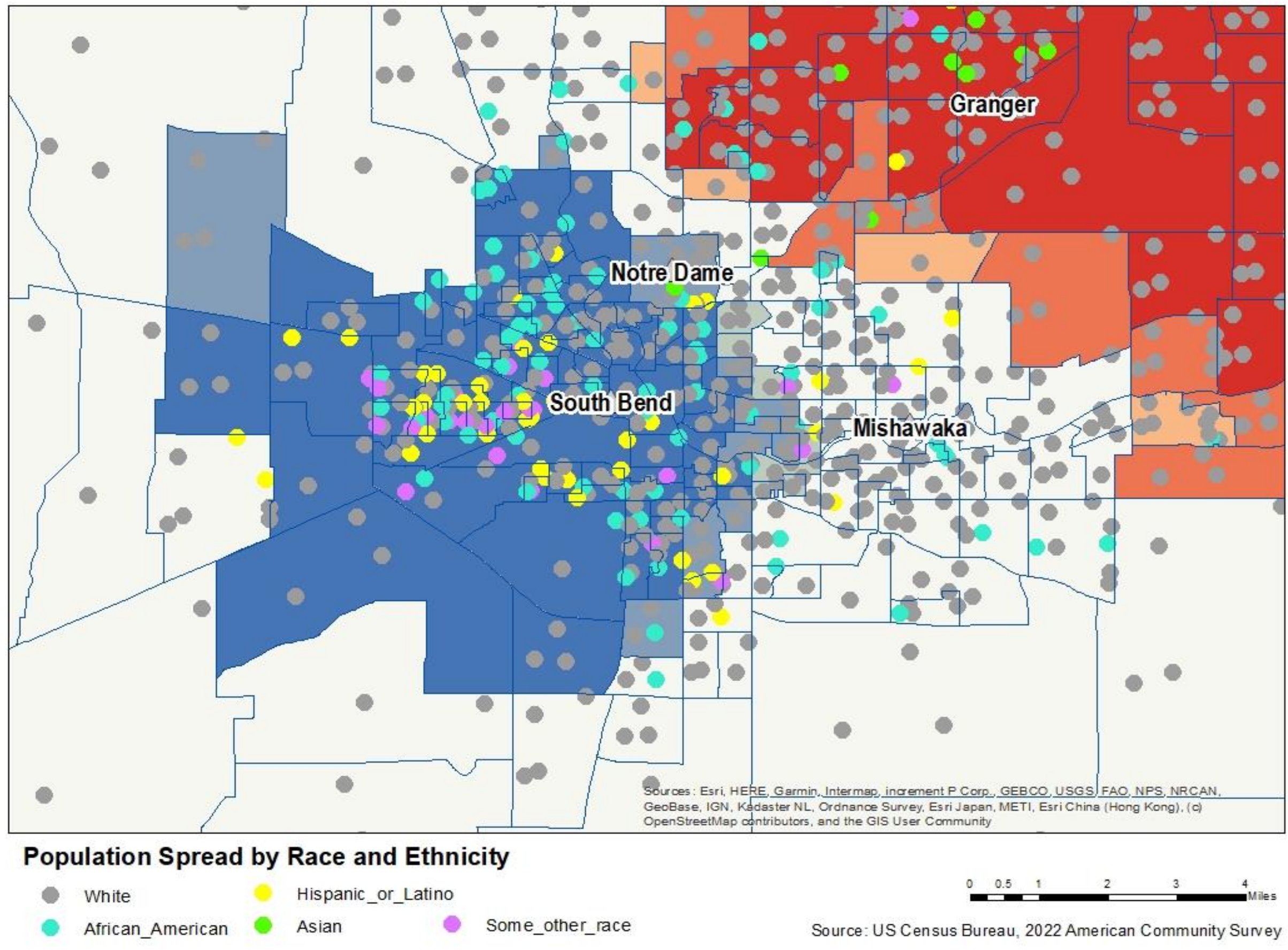
Map 2: Internet access hot and cold spots



Map 3: Income spread in hot & cold spots



Map 4: Race/Ethnicity spread in hot & cold spots



Policy recommendations

1. Leverage the South Bend Digital Equity Roadmap to prioritize the expansion of the Free Wifi initiative into identified cold spots, especially in the southwestern areas. Ensuring that the most vulnerable populations receive immediate attention will help mitigate existing disparities and enhance digital inclusivity.
2. Develop and implement targeted subsidy programs to reduce broadband service costs for low-income households. By making high-speed internet more affordable, these programs will support broader access initiatives.
3. Both St Joseph County and the city of South Bend should collaborate with local schools and nonprofits to conduct digital literacy workshops. These programs would focus on equipping residents with essential online skills, helping to increase their engagement with digital services.
4. Both St Joseph County and the city of South Bend should work together to offer financial incentives and grants to internet service providers who commit to upgrading and expanding their infrastructure in these underserved areas. This would help improve the quality and reach of internet services.

Conclusion

This study underscores the persistent digital divide within St. Joseph County, with significant disparities influenced by both income and racial composition. While the analysis provides a foundational understanding of the patterns of internet access, it is constrained by the limitations of the available data and the inherent complexities of socioeconomic impacts. Future research should consider incorporating additional socioeconomic variables and employing regression analysis to further delineate the causative factors behind internet access disparities. Moreover, examining the role of other demographic variables such as age and education could provide a more comprehensive view of the barriers to digital inclusion.

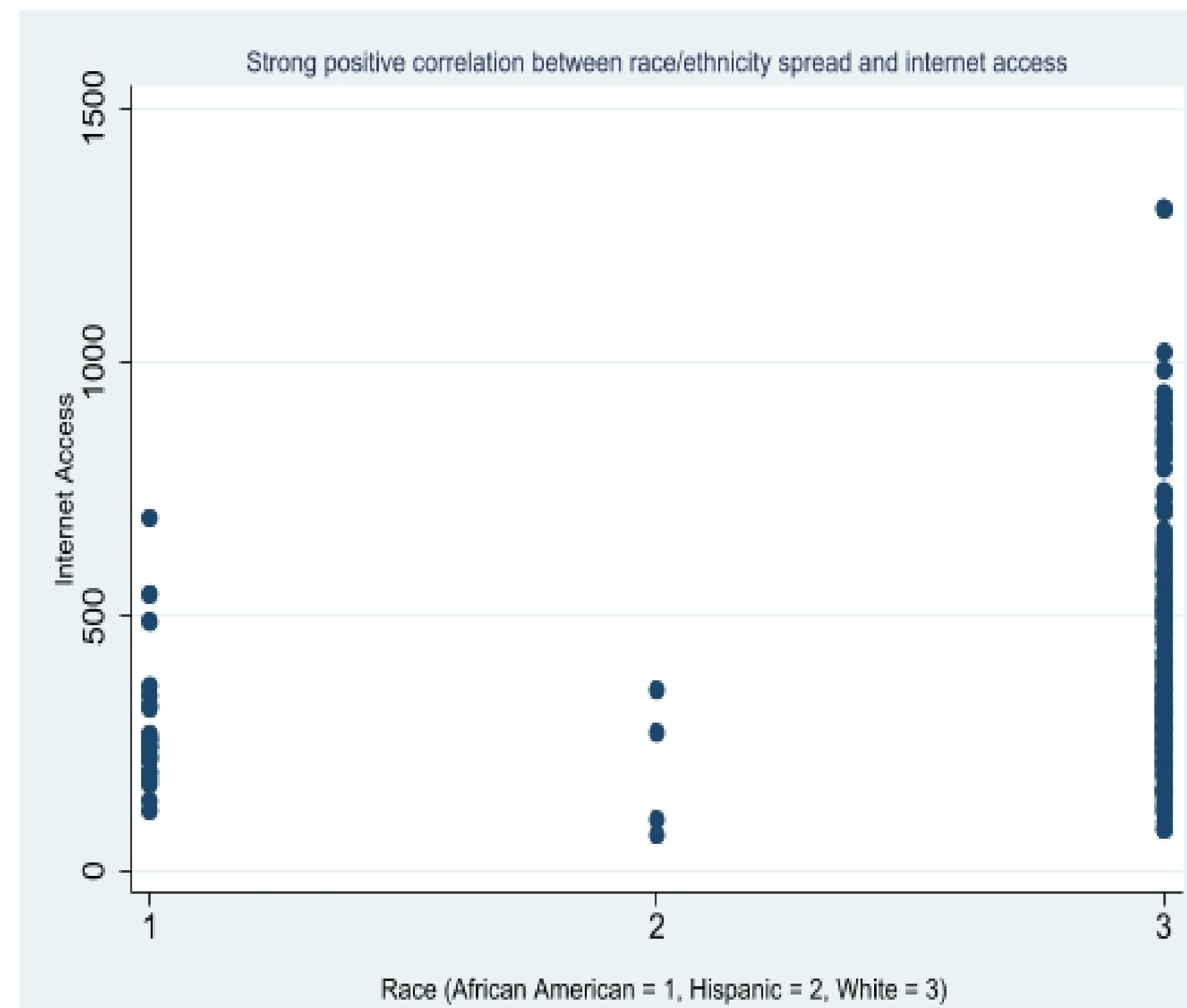
Findings

The analysis revealed a distinct pattern of digital divide across St. Joseph County, Indiana, driven by socioeconomic factors such as income and race/ethnicity. The choropleth map (Map 1) illustrates areas with varying levels of internet access, highlighting disparities primarily in lower-income and racially diverse block groups. Hotspot analysis (Map 2) identified significant clusters where connectivity is notably deficient, particularly around South Bend, while more affluent areas like Granger displayed higher connectivity levels. Dot Density and Proportional Symbol Maps (Maps 3 and 4) visually corroborate these findings, showing higher internet access in areas with higher income and predominantly White populations. Graph 1 and Graph 2 further quantify these disparities, demonstrating strong positive correlations between internet access and both income levels and race/ethnicity, thus underscoring the intertwined nature of socioeconomic status and digital accessibility.

References

- U.S. Census Bureau, 2022. American Community Survey 5-Year Estimates.
- BroadbandNow, 2022. National Broadband Report.
- Pew Research Center, 2019. Survey on Internet Affordability.

Graph 1: Correlation between internet access and race/ethnicity



Graph 2: Correlation between internet access and income levels

