

Policy Brief

California State University, Los Angeles

TECHNOLOGY AND THE GEOGRAPHY OF INEQUALITY: ASSESSING THE DIGITAL DIVIDE IN LOS ANGELES COUNTY

Prior to the popularization of the term digital divide in the mid-1990s, a number of authors had already documented the emerging disparities in access to digital technology. "Falling Through the Net: A Survey of the 'Have Nots' in Rural and Urban America," a report produced in 1995 by the U.S. Department of Commerce National Telecommunications and Information Administration (NTIA), was one of the earliest studies that documented disparities in access to telephone and computer use. The report's primary concern surrounding technology access was that an individual's economic and social success is increasingly related to one's ability to access, use, and disseminate information. As a result, the NTIA concluded that its primary goal—to ensure universal, affordable access to telephone service—should be applied more broadly, including other types of technologies. Since then, numerous studies (including additional NTIA reports) have confirmed and expanded upon the early NTIA conclusions: technology plays an invaluable role in determining life opportunity; the gap between those with technology access and those without has increased even while overall technology usage in the United States is on the rise; and definitions of the digital divide should be broadened.

Despite the tremendous progress in information technology, a significant number of communities remain disconnected and suffer from inadequate access to various modes of information acquisition and application. It has also been well documented that this digital divide corresponds with longstanding patterns of social and economic inequality. As a result,

strategies to equitably distribute digital technology may need to be seamlessly incorporated into other urban and social service delivery systems. This will assure that existing patterns of social isolation are not further exacerbated by inadequate access to available technologies.

Recent efforts by cities across California and the country to provide free or low-cost Wi-Fi Internet service to their residents demonstrates the vital importance of access to digital technology and its critical role as an urban service. Mayor Antonio Villaraigosa's recent proposal to build one of the nation's largest Wi-Fi networks, which would cover all of Los Angeles' 498 square miles, is based on the idea that universal access to digital technology improves economic opportunities both for individuals and the cities in which they reside. As cities and states prepare policies and strategies to increase access to digital technology, universal Wi-Fi being one approach, important questions are raised about who has—and does not have—access to different types of technologies and digital services within their municipal boundaries.

This policy brief summarizes the findings of a longer report (Modarres and Pitkin, 2006)¹ that explores both the geography of technology access in Los Angeles County and community perceptions of technology. Based on our findings, our policy recommendations are designed to help regions assess their own geography of access to technology, with the hope of enhancing the equitable distribution, access, and usage of relevant telecommunication technologies.

Continued on next page

¹ Modarres, Ali and Bill Pitkin. (2006). "Technology and the Geography of Inequality in Los Angeles". Edmund G. "Pat" Brown Institute of Public Affairs.

Available at: http://www.patbrowninstitute.org/publications/documents/CTF_Report.pdf

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The Geography of Access to Technology in Los Angeles County

As cities move toward policies and programs that attempt to correct and monitor current patterns of digital inequity, each region will need a methodology to identify neighborhoods and populations with limited technology access and usage. We have assessed Los Angeles County's traditional patterns of social isolation, as determined by socioeconomic indicators (e.g., levels of income, education) and levels of access to traditional services (e.g., public transportation, banking, education) compared with patterns of access to technology. To do this, we relied upon commercially available data. Such proxy data provide us with a basic understanding of the geographic inequities for numerous types of technologies (i.e., cable, DSL, dial-up, or wireless internet access; laptop or desktop ownership; cellular phone or wired phone ownership; satellite/cable subscription; Internet at home for work) in Los Angeles County. As our policy recommendations indicate, we advocate that actual technology subscription data be made available to researchers so that studies such as ours can be replicated.

Our evaluation of these traditional measures of inequity and access (as defined by usage/subscription) to technology at the census tract level indicates that even with proxy data, a clear relationship exists between socioeconomic status and level of access to technology. Corresponding with other research on the digital divide was the finding that overall educational attainment, employment status, median household income, and poverty status provided the best predictive ability to estimate the level of access to technology at the neighborhood level. Our analysis found that African American neighborhoods experienced lower levels of access to technology in every category, while the Asian/Pacific Islander community had access to technology at levels that were either at or slightly above the average for the County. In neighborhoods where Latinos constitute more than 75% of the residents, access to technology appears to be significantly below regional levels. In these tracts, access to technology is limited largely to local phone services and satellite/cable subscriptions.

Of primary concern is that traditional patterns of social and economic isolation are in fact reproduced by the geography of access to technology. Figures 1 and 2 illustrate the geographic relationship between socioeconomic status and access to technology. Clearly, inner-city neighborhoods—as well as other low-socioeconomic-status census tracts in the East San Fernando Valley, the South Bay communities, and the heart of the San Gabriel Valley—have some of the lowest levels of access to technology. Moreover, certain neighborhoods are without access to phones, public transportation,

and vehicles and thus physically and virtually further disconnected from others. This finding confirmed our original expectation that, in some cases, access to technology simply conforms to existing patterns of isolation rather than alleviates them. In some neighborhoods with low socioeconomic status, however, access to technology and its usage was actually found to be on par with some middle-class neighborhoods. These unexpected variations raise important questions about the complexity of the digital divide and the multiple meanings of technology in different communities.

Beyond Access: Redefining Technology

To more deeply investigate the dynamics of social and technological isolation and access, we conducted focus groups in four neighborhoods in Los Angeles County. While all focus groups were held in neighborhoods with low-socioeconomic status, two were held in neighborhoods with low-technology access and two in those with high-technology access. This strategy enabled us to explore multiple barriers to technology access and usage, including—but also beyond—cost. For example, when asked for their personal perceptions of technology, the focus group participants responded with varied responses, ranging from technology as a favorable and necessary part of life to fear that technology creates new types of risks (e.g., identity theft).

A wariness of technology was expressed by participants in several ways: a sense that companies are trying to take advantage of them; Internet content is inappropriate for children; and the risk of identity theft is high. This concern was especially high among monolingual Spanish speakers and those with little knowledge of or experience with technology. The younger and better educated participants in our focus groups were clearly more comfortable with technologies and saw the value in them. They also were more likely to speak English, another barrier, and less fearful of the technologies. Education level and age proved to be significant determinants of residents' abilities to access information and communication technologies.

Our focus groups highlighted the fact that residents of socially isolated neighborhoods face similar challenges (i.e., economic, educational, cultural, and linguistic) in accessing technology. The relative high cost of technological services is prohibitive for residents of these communities, and they are often overwhelmed by the complicated service plans of telecommunications companies. In particular, long-term contracts of cell phone and Internet companies were cited as problematic given the insecure economic situations of most residents. Cell phones, however, were the most common technology used by the participants of the focus groups.

The majority of participants said they had cell phones and they preferred this type of technology because of its flexible, mobile abilities. Cell phones were viewed as an ideal way to conduct business for the self-employed, and parents viewed cell phones as the most reliable way to keep in touch with children. Even if the digital infrastructure were universally available, the results of our focus groups underscore several prerequisites for technology usage. For a specific technology to be adopted, it must overcome several critical barriers to access in that it must be affordable, user-friendly, and socially and culturally appropriate.

Toward a Policy of Equity in Access to Technology

In every step of our study, we clearly witnessed the relationship between socioeconomic status and access to various forms of technology. Beyond our quantitative analyses, community focus group meetings confirmed that the main concerns for the low-income population are access, price, and content. As market goods, technological services can easily become media for further differentiation of the population by the existing social class structure. For example, given the degree to which race and ethnicity are mapped against socioeconomic class in our society, it is not surprising to see how access to technology corresponds with racial and ethnic concentrations. In Los Angeles County, we were able to illustrate how African American, but particularly Latino, neighborhoods were affected by low levels of access to technology. Therefore, it appears that current geographies of inequity are simply reproduced by the geography of access to technological services.

In a multiracial, multiethnic, and multicultural society, where complexities of social class have been intricately mixed with (and reproduced by) various urban services and amenities, new innovations, especially those that can improve one's socioeconomic status, cannot be expected to vanish the observed differences overnight. More likely, a laissez-faire approach may simply reproduce and expand the current patterns of social differences. The myth of the market works only so far as the upper-class and the middle-class populations are concerned. In our research, the census tracts with low-socioeconomic status will not benefit from current levels of technological innovation, whether due to their social, education, cultural, linguistic, or economic condition. Markets will bypass these neighborhoods if interventions through spatial targeting are not adopted. Without policies that ameliorate the current patterns of inequity, we should expect that every wave of technological innovation, especially those that affect economic conditions (e.g., employment and working practices), will further marginalize and isolate those who can afford it least.

As we look to the future of California, and indeed the nation, it is clear that equitable access to technology will become the fundamental cornerstone of our economic and community development. To that end, we need to consider the adoption of procedures for monitoring our progress and dealing with problems as they occur. We view our research as a case study with a prototypical database. While we are comfortable with the methodology, our interpretation is limited by the geographic scope and datasets we used. To move toward adopting area-based policies, we recommend that a similar methodology be used in examining other places, both urban and rural. However, this new set of analyses should rely on actual subscription and technology usage data.

We strongly believe that the creation of a centralized database for census tract level subscription and usage can help monitor patterns of inequity and methodologies to ameliorate them. While technology providers hope to reach all communities, regardless of their socioeconomic status, the task of research and monitoring of access patterns may lie elsewhere. The availability of spatially aggregated (uniform) customer data from individual technology providers is critical for organizations (e.g., the Community Technology Foundation, the Public Utility Commission) and researchers to meaningfully monitor and analyze access to technology and its usage. This would protect the anonymity of individual customers while allowing researchers to monitor the changes in access to specific groups of technology over time. This database would also allow us to target specific neighborhoods for equity considerations in pricing and priority for access. In the years to come, we should attempt to improve our research and policy agenda on all fronts, while remaining committed to the inclusion of community voices and the basic principles of equity and social justice.

In an effort to prevent the worsening of the digital divide and minimize the compounding influence of existing socioeconomic and geographic disparities, we advocate policy makers in California to do the following:

- **Conduct statewide annual or biannual spatial assessments of technology subscription patterns**
 - Not unlike current methods that monitor banks and their lending practices, annual or biannual spatial assessments of subscription patterns could help us improve and expand the needed infrastructure, as well as design programs that improve the level of regional equity in access to technology.
- **Urge the private sector to make its subscription data available for researchers to conduct a statewide study identifying real technology isolation**

- o Given that our analysis relied on commercially available data, we recommend that similar analyses be conducted within all metropolitan areas, as well as the entire state (i.e., to understand also the needs of rural areas), by employing actual information on subscription and utility.
- **Monitor and integrate community-based definitions of technology**
 - o We argue that community-based definitions of technology would gauge the level of affordability and knowledge of specific forms of technology in various communities. This qualitative information would also help define the meaning of technology and its perceived application to everyday life in a community. In the end, the sociocultural context for understanding access and the use of technology is as important as the economic context and quantitative measures of social class structures.
 - o A community-based approach to increasing access to technology should include socially and culturally appropriate programs that provide training on technology acquisition, technology usage, and content creation.
 - o In order to expand the usage of relevant technology in underserved communities, price, speed, mobility, and content must be monitored on a continuing basis.
- **Adopt area-based policies that ensure equitable access and distribution of digital technology**
 - o Throughout our analysis, we recommend that issues of social justice and equity should be combined with area-based policies that address infrastructural needs of specific communities. The goal of further diffusion and adoption of technology should include the voice of the community as well as the degree to which access to employment, urban services, and socioeconomic mobility are defined by the application and utility of technology.
- **Promote adaptable technology with the ability to supersede geographic barriers**
 - o Many types of technologies (e.g., cellular, Wi-Fi) lack the physical constraints, both in terms of infrastructure and usage, of older technology. Investment in these technologies may increase access and usage because of their mobile abilities and because they better reflect the needs of the users.

Without policies that ameliorate the current patterns of inequity, we should expect that every wave of technological innovation, especially those that affect economic conditions (e.g., employment and working practices), will further marginalize and isolate those who can afford it least. A democratic society will surely shun such results, favoring higher levels of prosperity and improved quality of life for every person and every community.

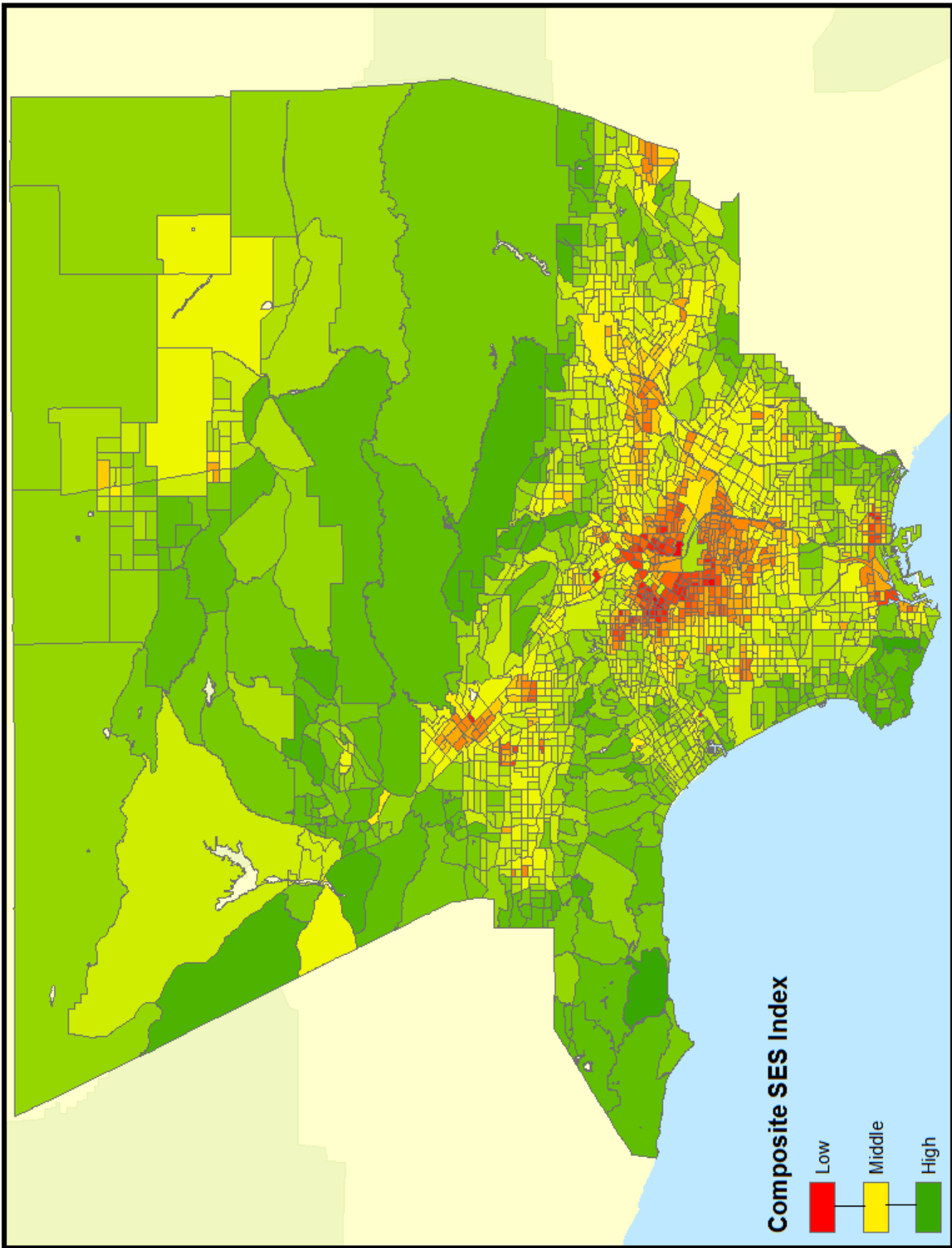


Figure 1 - 2005 Estimated Composite Socioeconomic Index
(Source: Claritas, Inc., 2005; Processed and Mapped by Authors)

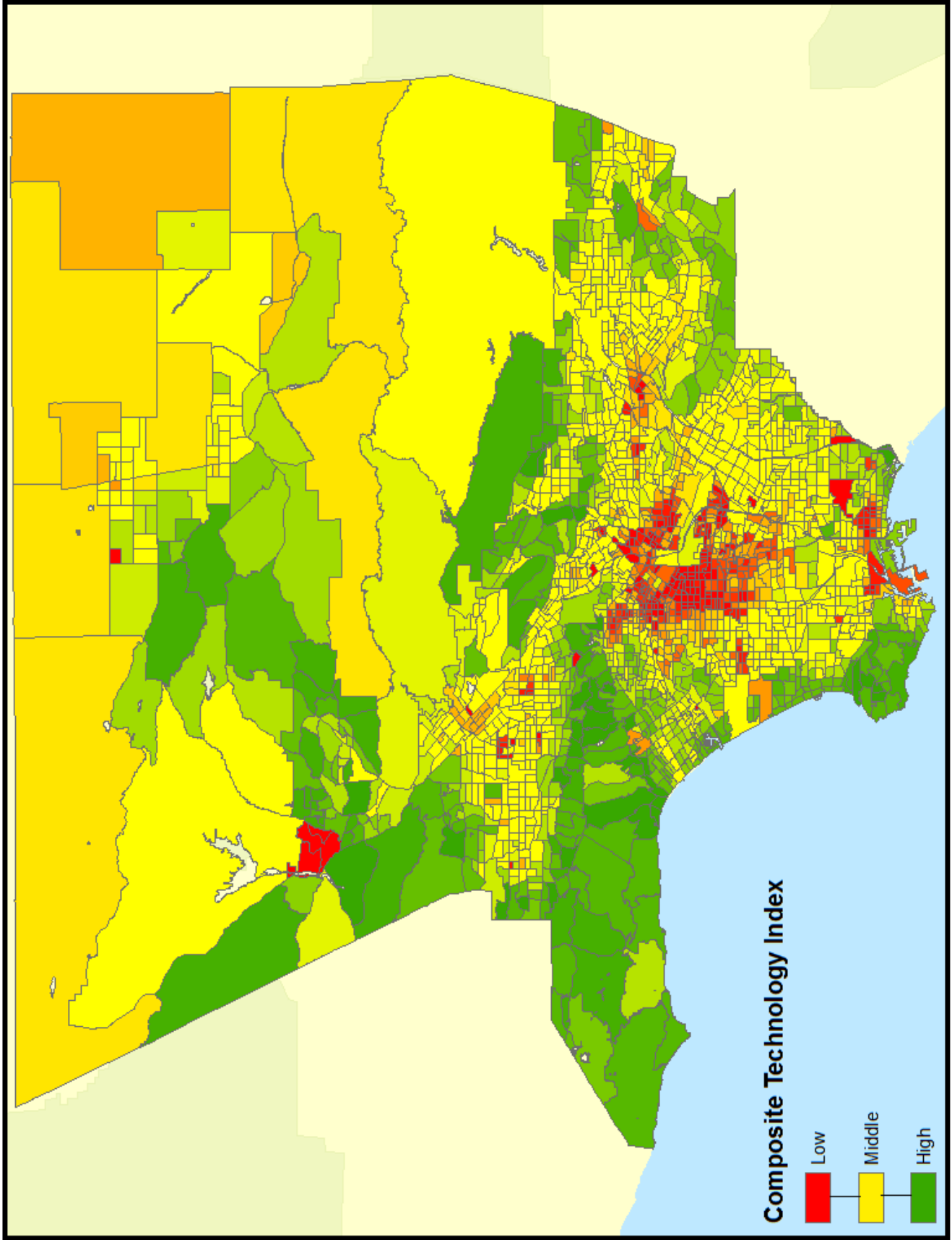


Figure 2 - 2005 Estimated Composite Technology Index
(Source: Claritas, Inc., 2005; Processed and Mapped by Authors)



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