

Who Is the Public in Our Public Libraries?

Exploring the Spatial Variations of Library Services in Chicago, IL.

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HONOR CODE PLEDGE

I have neither given nor received unauthorized aid on this assignment.

A handwritten signature in cursive script, reading "A. Zalecki".

Alexandra "Ola" Zalecki


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Abstract

Considering the privatization of space within urban landscapes and growing disparities in equity, libraries have incredible potential to shed light on community needs and the power of public space. This paper not only investigates the ways in which library services/uses vary across space but also the ways in which they map onto the diverse socioeconomic & demographic characteristics of the neighborhoods that they serve. In this study, I map socio-demographic variables from the 2021 American Community Survey onto library service areas generated using Thiessen polygons. I surveyed Chicago Public Library web profiles to collect library service data which was then analyzed alongside the socio-demographic variables. The results of this research reveal a relationship between socio-demographic variables and library services among library service areas with noticeable variability across the city - which is reflective of Chicago's longstanding history of racial and economic segregation. Socio-economic and demographic characteristics significantly relate to the services, programming, and amenities found in Chicago libraries. Rather than using libraries in their "traditional" book lending sense, disadvantaged areas seem to rely more on non-traditional services that libraries offer like internet access and social supports. Considering challenges that these neighborhoods might face like lower incomes and educational attainment and limited access to internet, these patterns may be due to targeted efforts of local libraries to meet the needs of their constituents. However, this study also reveals gaps in access specifically related to libraries that do not offer mental health and citizenship support services but are situated in communities that would benefit from them.



Introduction

Distant chatter at the front desk is interrupted by the chirp of the barcode scanner. A mother skims the back of a book as she attempts to herd a shrieking toddler through the stacks. An elderly man clumsily shuffles through his newspaper next to a student clacking at their laptop. Suddenly there's an eruption of loud whoops and giggles from the group of young boys huddled around a computer screen.

Look past the book stacks and you will see that the public library surpasses your perceptions of what it should look, sound or be like. Traditionally, libraries have functioned as places of book collection and borrowing but today, libraries are a setting for a number of non-traditional activities. Although libraries still provide access to print material and the internet, they have also advanced past these traditional uses and in their evolved form support alternative services like organizing book clubs and facilitating open hours for homework help. Some libraries now have dedicated rooms for makerspaces or function as de facto homeless shelters. Others may offer regular English lessons, career development workshops and assistance with taxes.

Libraries are not only a critical amenity but also an essential and unique form of public space. In the United States, libraries are one of the most widely distributed indoor public spaces across both urban and rural landscapes. They serve as centers of information, cultural gathering and socialization. Because they are widely prevalent across regions, there is legitimate value in studying their impact on their communities. Libraries have been found to advance the health of a population because they promote access to healthcare and provide various forms of social support (Pilbin et al., 2019). Library systems in King County, Washington have demonstrated

that libraries foster community building. By providing space and information or just functioning as neutral spaces, they decrease social isolation and promote community involvement (Scott, 2011). A Pew Research Center study found that approximately two thirds of Americans aged 16 or older consider that closing their local public library would have a major impact on their community (Horrigan, 2015). Because they exist as critical public amenities, libraries monitor their communities closely and should reflect the needs of their populations. Research has not only confirmed the social merit of the public library as a community touchstone but also as a sink of valuable information about their social environment.

Questions regarding the spatiality and variability of library programs emerged from my own experiences visiting various libraries across the Chicagoland area. Depending on which library I was visiting and which neighborhood that library was in, its internal space would look and sound different. Where one library was  quiet another was buzzing with activity. This not only reflects differences in who was using this public resource, but also how it was being used. Karen MacPherson, a librarian and former children's and youth services coordinator at Takoma Park Maryland Library, describes this phenomenon of changing noise levels as reflective of the shifting uses of library space. She claims that because libraries are expanding their programs with a focus towards socializing and community involvement, libraries are evolving into louder "bustling community  centers." Yet communities across urban landscapes can widely vary along lines of race and class.

If the communities in a city are not homogenous, then the libraries should not be, either. Chicago, the setting of this study, is ethnically and culturally diverse with numerous unique and distinct neighborhoods. Urban segregation is a defining feature of this city which has been delimited by centuries of racist and classist redlining practices. The outcome is strikingly evident

in the physical landscape. Take a drive down Western Ave, a major north south street, and you can see the transects between neighborhoods of bungalow homes and manicured lawns to those with empty lots and stacked apartment buildings. Different community needs that may possibly impact the types of programs and services provided by libraries. These developments are also possibly indicative of changing perceptions about libraries and, therefore, the value of free to use public spaces.

The goal of this research is to not only map the geographic distribution of libraries in Chicago, IL but to investigate the ways in which library services vary across space and in ways that reflect the socioeconomic & demographic characteristics of the neighborhoods that they serve. More broadly, these questions explore how the form and function of library services vary in ways reflecting the diverse/heterogeneous populations they serve. This study also speaks to larger questions of how libraries function as third places and how they are demonstrating degrees of flexibility to better provide for their different publics.

This study specifically aims to answer the following questions:

- How do library service areas differ along socio-economic and demographic lines in Chicago?
- To what extent do the socio-economic and demographic characteristics shape the services, programming and amenities available at these libraries?

This analysis draws on both publicly available Census data, geospatial methods and information gleaned from library web sites to reveal patterns of service among Chicago's public libraries.

Literature Review

The literature review begins with an overview of the existence of public space in urban landscapes as well as a conceptual definition to understand public space. Along with a definition of public space, I include a discussion of its various forms and degrees of “publicness” as neoliberal thinking has led to varied reconfigurations privatizing public space. I contend that public spaces in urban landscapes are disappearing and that public libraries are a relevant and valuable example of public space that is worth analyzing and preserving. The literature review not only summarizes the social role of the library but its role as a form of public space. I then provide a summary of the traditional role of the library along with a review of the literature regarding the evolving dynamics of library service. The final part of this chapter reviews in detail the literature regarding the use of geographic information systems (GIS) to analyze the distribution of library services.

The decline of public space

The unfortunate reality is that private spaces owned by individuals or corporations are the dominant spaces in urban landscapes. Investment in public spaces has dwindled over the last several decades while privatization of space under neoliberal regimes has become the norm. Often times, truly public spaces are outcompeted by their private counterparts because of poor design or insufficient maintenance. More commonly we view sidewalks as a second choice to traffic congested roads. Green spaces like parks in urban areas are limited and designed to discourage people from sitting or sleeping. The already scarce number of public spaces are threatened by increasing privatization in urban areas. In 2021, Navy Pier in Chicago, IL announced that it would be removing and replacing its Crystal gardens, a 1-acre free and publicly

accessible indoor garden, with paid virtual reality exhibitions. Despite pushback from staunch locals in favor of the garden, the rationale behind this decision was a financial one and an effort to counteract decreased revenues (Velez, 2021). Ewertowski (2023) observed the diminishing role of popular streets in the city center of Poznań, Poland, as social life has moved to places like shopping malls. The existence of public places where you have to pay to use them privileges one social group and disadvantages another. Taking into account this reality, it is more important than ever to consider the roles and uses of public space in urban landscapes.

What exactly is “public space”?

Due to the multidimensional nature of public space, the term itself is sweeping and ambiguous. Some public spaces can be more or less public than others depending on physical, social and cultural restrictions. Certain regulations and norms can dictate the activities and behaviors permitted in a place. Setha Low provides one way of understanding public space through a framework of characteristics that can be used to describe public spaces. These include physical aspects, ownership, governance/management, control/influence, rules/regulations, access, symbolic/historical meaning and political activity. Consider two different “public” places, the street and the museum, as examples. Both are managed by the local government. Both exist as spaces open to the public. However, they serve different social purposes and, therefore, may function differently. Museums have a particular objective in storing and exhibiting historical or artistic objects. They are part of the public infrastructure and have a cultural importance. In most cases, entrance to a museum comes with a fee which can limit access to the broader public. Certain activities are restricted in the museum, and one would not expect to say find a street vendor inside the museum. On the street is where you will find the hot dog stands and eloteros, the preachers and the Bucket Boys. The street is as much a place of origin and

destination as it is a path to either. Both the street and the museum **can** be settings of community building, **play**, socialization and protest. Yet, the form of these various public activities would vary considerably between the street and the museum. By considering this framework we can see that public spaces can notably vary from each other and that differing degrees of “publicness” exist.

Public places differ from each other not just because of their various fundamental purposes but also because they are shaped by the people that use them. Geographers and urban planners are well aware of the cyclical nature of the relationship between people and places. Space is a dynamic concept and it “has the ability to produce new meanings, as experiences and practices take place in them” (Cruz et al., 2018, p.1). Additionally, patterns in space can be observed since “Different types of urban spaces are associated with the specific activities of different social groups” (Siláči and Vitková, 2017, p.1).

At the same time, **people** create places and are shaped by them. If the general public of a city is not homogenous, consequently, the public places one finds across the city should not be either. Different kinds of publics may use public space in distinct ways because they have varied cultural interests or social needs. If we consider this theory of heterogeneous publics and dynamic space within this case of libraries, then we can deduce/hypothesize that public libraries across Chicago will not only be different but should also reflect the needs of their local **publics** if they are truly serving their respective publics.

Depending on the geographic location of a place, outdoor public spaces can be limited due to the weather. In an economic report of Wisconsin’s public libraries, NorthStar Economics Inc. emphasizes this reality:

Although many towns also have community centers and parks, Wisconsin winters render such options unavailable a significant amount of the time...Many interviewees place a great deal of importance on the value of a comfortable public library facility where they can gather, especially as opportunities for social interaction have decreased in the wake of more people seeking out services online (NorthStar Economics Inc., 2008, p. 54).

Because most public spaces are open air and exposed to the elements, people living in colder climates will opt for indoor spaces, which are predominantly commercial or private. The rising pressure on libraries as accessible indoor public space is occurring simultaneously with a reimagining of library functions in the present age.

Traditional vs non-traditional library services

“As change becomes ‘routine activity’, libraries must reimagine themselves as evolving organisms rather than static objects” (Hoyer, 2011).

Definitions of what constitutes traditional and nontraditional library services are not widely agreed upon. In part because conceptualizations of “traditional” and “non-traditional” are not only relative but also context dependent. Cletus (2022) defines the “traditional library” as, “a building constructed first and foremost to house print collections” with an “emphasis on storage and preservation of physical items, particularly books and periodicals.” In this definition people are secondary. Cletus also describes the concept of the “modern library” as a place that “emphasizes access rather than ownership” and one that serves as a center of information. The modern library’s features include offering free Internet access, providing reference and user educational programs, having spaces for exhibitions and community meetings, etc. In the 21st

century, “maintaining spaces where print books have more privileges than people seem to be unnecessary” (Rodrigues Dantas, 2015).

Although exact definitions vary, there seems to be a consensus that the contemporary library is shifting away from traditional services of print book collection and lending (Howard, 2019; Pierce, 2021; Hepler & Horalek, 2023). Nontraditional librarianship “can be imaged in a plethora of different ways” and definitions of what is “traditional” and “nontraditional” will gradually shift over time (Fraser-Arnott, 2021). Libraries are constantly responding to the changing needs and interests of their stakeholders. However, Fraser-Arnott (2021) identifies a few examples of shifts from the traditional to the non-traditional that some libraries have exhibited. These can include but are not limited to programs that offer technology lending or services like notarization and voter registration.

With these various interpretations and definitions considered, in the case of this study, I defined traditional library services as anything to do with the circulation of print material, and academic research. Nontraditional services were any feature/element of the library that did not conform to this definition and had nothing to do with print or electronic reading material such as any features and services with a focus on access, social services or supporting collaboration and community building.

Overall, literature regarding library use tended to focus on measuring it in terms of the traditional type of library. Because libraries have traditionally functioned as places of storage and dissemination of print materials, measures of service were created around these specific uses. Therefore, in the literature, library service was most commonly estimated using metrics like circulation, staffing, funding, etc. (James, 1985; Carlozzi, 2022; Donnelly, 2013; Japzon &

Gong, 2005; Park, 2012; Sei-Ching, 2005). Material circulation is especially used as a metric because it is the most available and complete quantitative assessment of library use and service (Koontz, Jue, Lance, 2005). Library services and use have also been studied in terms of accessibility; defined as distance from or proximity to a library (Hayes & Palmer, 1983; Park, 2012).

Although accessibility and circulation are important variables in analyzing library services, they do not paint a full picture of what the public library has to offer, particularly as libraries take on novel functions. A study conducted by the Pew Research center found that “traditional activities such as checking out a book or getting help from a librarian are somewhat on the decline” (Horrigan, 2015) Borrowing books was found to be more likely done by college graduates or people with higher annual incomes. On the other hand, library users that identified as young, Hispanic or generally lower income were more likely to use the library as a place to spend time in (Horrigan, 2015). Measuring library use only through circulation is potentially misleading and underestimates a library’s impact on its local community members. If we are to understand libraries as shifting away from the traditional model of book stacks and storage, using these metrics alone may no longer be an accurate measure of the other valuable library services that libraries provide for their local communities.

Spatial analysis of libraries in the literature

Geographic Information Systems (GIS) has been a useful tool in terms of documenting the broader geographic distribution of library service on a national scale (Donnelly, 2014; Swan et al., 2013) and its contemporary uses in analyzing library services have been well documented by Mandel et al. (2020). Swan et al. (2013) examined the geographic trends of small and rural

public libraries and found a general increase in the use of their services nationwide. Donnelly's (2014) study examined the geographic distribution of public libraries in the United States to identify variations in library distribution based on geographic region or socioeconomic group. Their research revealed that 65% of the total population of the United States lives within a geographic library service area as defined by buffered library points. The size of the buffers varied depending on whether the library was located in an urban, suburban, or rural area. The study also showed that on a national scale the percentage of people living within a library service who were non-US citizens, in the lowest income bracket and non-white was noticeably higher. To account for higher concentrations of people, cities are more likely to have more libraries and be better served by them. This coincides with the pattern that non-white, particularly Asian and Hispanic, individuals are more concentrated in urban areas (Klein, 2004). GIS has also been used to examine landscapes of socioeconomic inequality, access, and spatial variations of neighborhood characteristics. Sei-Ching's (2011) study revealed that nationally, neighborhoods with higher incomes had libraries that provided higher levels of service as measured by the number of employees, internet terminals, library programs and the availability of certain materials. Carlozzi's (2022) national study of library usage found that higher levels of circulation correlated with greater measures of education attainment and wealth.

There is extensive literature that uses GIS to examine socio economic unevenness and how it relates to other public places/facilities/social amenities like parks and hospitals. Hence, we can see that these patterns of inequality in the urban landscape are not unique to libraries. An analysis of tree canopy data and various demographic factors revealed that across 486 metro areas in the United States, poor neighborhoods had 25% less tree cover on average. In comparison to their lower income counterparts, affluent neighborhoods benefited from a higher

share in greenery and urban tree cover (Leahy & Serkez, 2021). A national study of neighborhoods and hospitals' quality of care in US urban metropolitan areas revealed that hospitals in more disadvantaged neighborhoods were of lower quality and exhibited worse mortality scores (Nwana et al., 2022). Although these studies do not directly relate to this question of public libraries, they provide useful methodological models for examining the spatial distribution of public goods and services. Libraries are just one case of a public amenity whose access and service are affected by its geographic location.

A place-based study of library programming and functions can be valuable for understanding the local relationship between neighborhoods and their public libraries. Most of the studies that I have mentioned examine this relationship on a national scale. Although analysis at the national scale is valuable, these large-scale investigations overlook potential small scale and neighborhood level intricacies- especially in urban areas. Swan et al. (2013) found that in the fiscal year of 2011, city libraries on average served a population of 99,743 and targeted a service population of over 104 million people. Because of the concentration of people in urban areas and the sheer number of people being served it is valuable to dive deeper into libraries in urban areas. In this case an investigation at the local scale is appropriate.

A few studies have attempted to conduct this sort of spatial analysis at the urban and metropolitan level. Thorne-Wallington (2013) maps the locations of libraries in metropolitan St. Louis, MO, and examines how they are correlated with certain socioeconomic factors defined by the US Census. She found that the use of GIS was constructive in illuminating the local social, cultural and economic factors that can impact library access. Her study revealed an unequal relationship between library location and race and income. In St. Louis, there were fewer libraries in census tracts with low median household incomes. Additionally, no libraries in the

northern parts of the St. Louis metropolitan area were located in census tracts with the highest populations of the Black population. Indeed, cultural and social factors relate to how people can access these spaces. Japzon and Gong's (2005) neighborhood level analysis of public library use in New York City is another example. Their exploration of the relationship between library use (defined as circulation per capita) and social factors (education, income, and race) confirmed the importance of race and education as predictors of library use. They found that, generally, neighborhoods with higher percentages of Asian and White populations had higher levels of public library use at least as measured by circulation. On the other hand, higher percentages of Hispanic and Black populations revealed the opposite, lower levels of public library use. The research of Japzon & Gong (2005) and Thorne-Wellington (2013) both emphasize the importance of a neighborhood analysis approach in highlighting the relationship between local neighborhood characteristics and library use/access. However, Thorne-Wallington (2013) only considers library location and Japzon & Gong (2005) only uses circulation to represent library use. They do not consider non-traditional services and alternative measures of library use.

Methods

The methods I employed to conduct this research is detailed in the following section. This section is divided into three parts that reflect the multi-stage approach I used to collect and analyze the data for this study. Firstly, I defined the library service areas that would serve as the library “neighborhoods” and my spatial units. The library service areas were characterized by the sociodemographic variables available through the US Census and American Community Survey. A population weighted reaggregation technique was applied to apportion block group level census data to the 81 library service areas. The 81 libraries in Chicago were surveyed using their online library profiles. Finally, I analyzed the data through visual and statistical means.

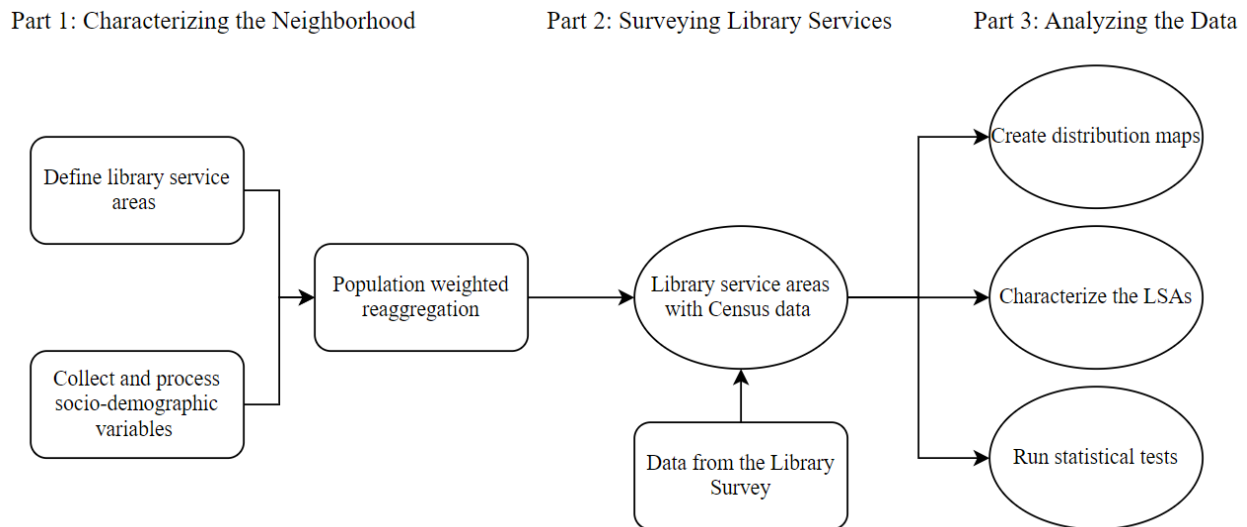


Figure 1. General workflow for the analysis

Part 1: Characterizing the Neighborhood

A. Collect and Process Socio-Demographic Variables

Mapping neighborhood characteristics onto the library service areas required social, economic, and demographic data. The social and demographic variables (see Table 1) used in this study were obtained from the 2021 American Community Survey (ACS) 5-year estimates and 2020 decennial United States Census. Socio-demographic variables from the ACS were obtained at the Census tract level. Population counts were obtained both at the tract and block level from the US Census.

Table 1: Neighborhood characteristic variables considered in this study

Economic	Median family income Employment status Poverty Status
Demographic	Total population Race Ethnicity Age sex
Social/Cultural	Nativity Educational attainment

B. Define Library Service Areas

Libraries do not have formally defined geographic service areas and it was necessary to create spatial units for this analysis. The Chicago Data Portal maintains a data set of all Chicago Public Library Locations, contact information and usual hours of operation. The locations of the

81 libraries were plotted as points in GIS using their latitude and longitude coordinates from this data set. GIS was used to create proximal zones by generating Thiessen polygons from the library points. Thiessen polygons or a Voronoi diagram is a type of tessellation, a tiling of a surface with geometric shapes with no overlaps or gaps. Every point within a polygon is nearer to its central point than any other point in the layer. Thiessen polygons are computationally simple which makes them a popular method within these types of applications (Sung 2012; Japzon & Gong). Additionally, this method has been used to delineate service areas of parks (Boone et al, 2007; Sister et al, 2009).

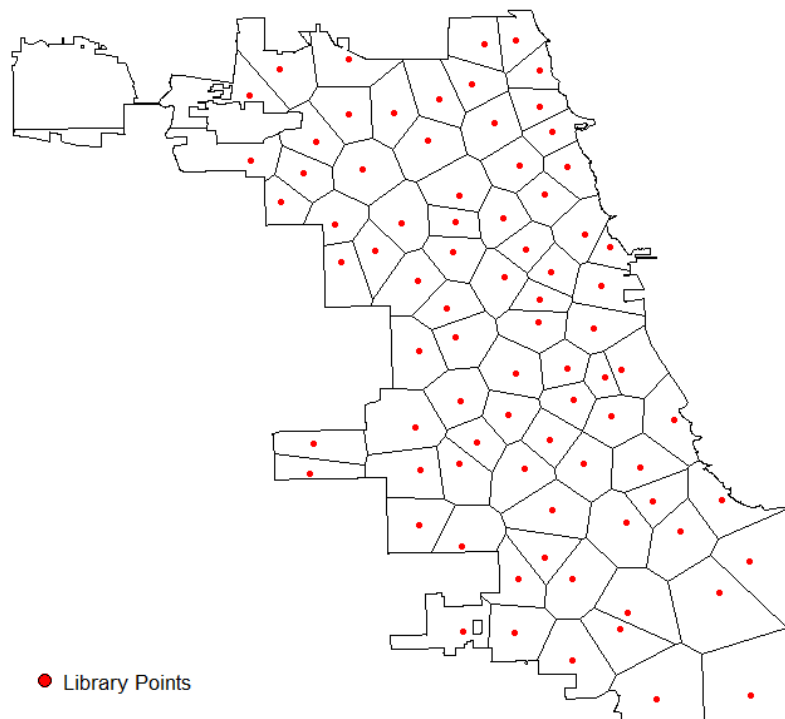


Figure 2. Library branches and service areas in Chicago, IL

I recognize that creating arbitrary boundaries for unbounded spatial phenomena will have its limitations. By using Thiessen polygons, I assume a connection as a function of areal proximity. Firstly, libraries are expected to cater their services to the neighborhoods that they are

located in. The First Law of Geography, according to Waldo Tobler, states that, “everything is related to everything else but near things are more related than distant things” (Tobler, 1970). In this case, I am assuming that people will frequent the libraries closest to their homes. Although this certainly is the case for many people, others may travel longer distances to access different kinds of services available at other libraries or frequent libraries near their school or work. Nevertheless, delineating library service areas using Euclidean distance instead of network distance is not an arbitrary choice. Other methods have also been used to approximate spatial relationships between libraries and their neighborhoods around library points to represent the reach of library services to demonstrate possible gaps in service (Koontz et al, 2005). In the case of this study, because that was not a focus, Thiessen polygons sufficed. Figure 1 illustrates that libraries in Chicago are relatively evenly distributed which makes Thiessen polygons a justifiable choice for this kind of spatial analysis and in-line with the exploratory purpose of this study.

C. Population Weighted Reaggregation (PWR)

The Thiessen Polygons representing LSAS, unfortunately, do not map neatly onto the Census geographies of blocks that contain the socioeconomic data. To address this, I apportion census data to service areas using a population weighted reaggregation technique.

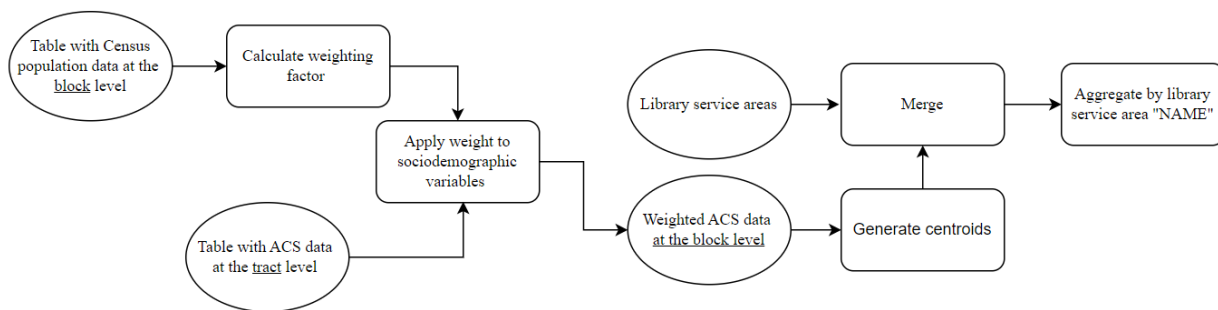


Figure 3. Process for the Population Weighted Reaggregation

Before apportioning the sociodemographic data to the LSAs, data was processed and transformed from one scale (tract level) to another (block level). The population within a tract in Chicago is not necessarily always evenly distributed (see Figure 2) however the ACS only relays sociodemographic data at the tract level. Therefore, in order to increase the granularity of this data I transformed the sociodemographic data from one scale (tract) to another (block). I first excluded all blocks with zero population from the analysis. Then I created a weighting factor that was the proportion of the census tract population in the individual block. This proportion was representative of the population contribution of an individual block towards the total population of the census tract that it belongs to. The proportion weight was then applied to the social demographic variables at the tract level so the result would be a weighted count by its population contribution.

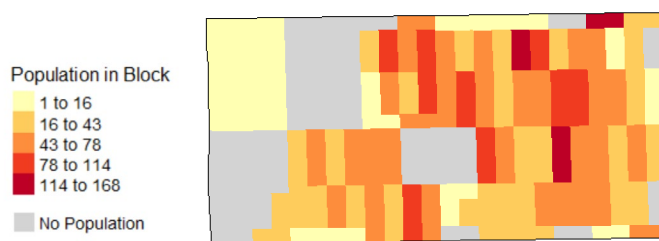



Figure 4. Example of a tract with unequal distribution of population

Apportioning the social demographic data to the LSAs consisted of generating centroids from the blocks and doing a centroid assignment to the LSAs. Sociodemographic data was aggregated by the name of the library service area and summed. Apportioning the data in this way allowed me to profile the sociodemographic characteristics and be confident in the quality of the data outputs. Apportioning the data in this way maintained an acceptable degree of data precision and accuracy. From this step I could normalize the data by the population in the LSA and further aggregate by whether a library provided a service or not.

Part 2: Surveying Library Use, Services, and Programming

The Chicago Public Library (CPL), consisting of 81 locations, is the system that serves the city of Chicago. According to the American Library Association, it is one of the largest public libraries in the United States. The main branch and central library in the system is the Harold Washington library located in the Loop of downtown Chicago. The library system also includes 3 regional libraries: Sulzer Regional, Woodson Regional, and Legler Regional. Regional libraries are typically larger, better staffed and provide a wider range of services. The rest of the library locations are considered “branch” libraries and distributed across the city. As of April 2024, all libraries but one are operating. The Galewood Montclare branch located in the Montclare neighborhood on the West side has been closed since 2021 and was withdrawn from this study.

Scholarly research regarding library use has predominantly used metrics like the number of print materials and circulation to evaluate library performance/use (Carlozzi, 2022; Donnelly, 2014; Japzon & Gong, 2005; Sei-Ching, 2008). By only looking at metrics like circulation and visitation we are missing out on so many other experiences. This limitation is recognized by researchers like Donnelly (2014) and Koontz et al. (2005). Koontz et al. (2005) emphasize the value of collecting neighborhood level data for precision and develop a survey questionnaire which they administered over a two-year period. Unfortunately, metrics for measuring nontraditional library use/services are not standardized and due to the unavailability of readily available data, circulation remains as the primary measure of library service.

However, libraries’ increased web presence has afforded us the possibility to explore the kinds of services they offer other than print material circulation. The Chicago Public Library has

a library profile for its 81 neighborhood branches on their official website (www.chipublib.org). An initial scan of 3 library profiles revealed that the profiles were conveniently formatted to be more or less identical to each other. This initial scan also allowed me to create a list of variables for my survey that I planned to look out for and include in my study. Information on the libraries like their regular hours, address, contact information, upcoming events, facilities, features, parking information and accessibility information appear consistently across the 81 profiles. Depending on the library branch, the profile will also include a section or a button for special programming like, YOUmedia, Teacher in the Library, etc.

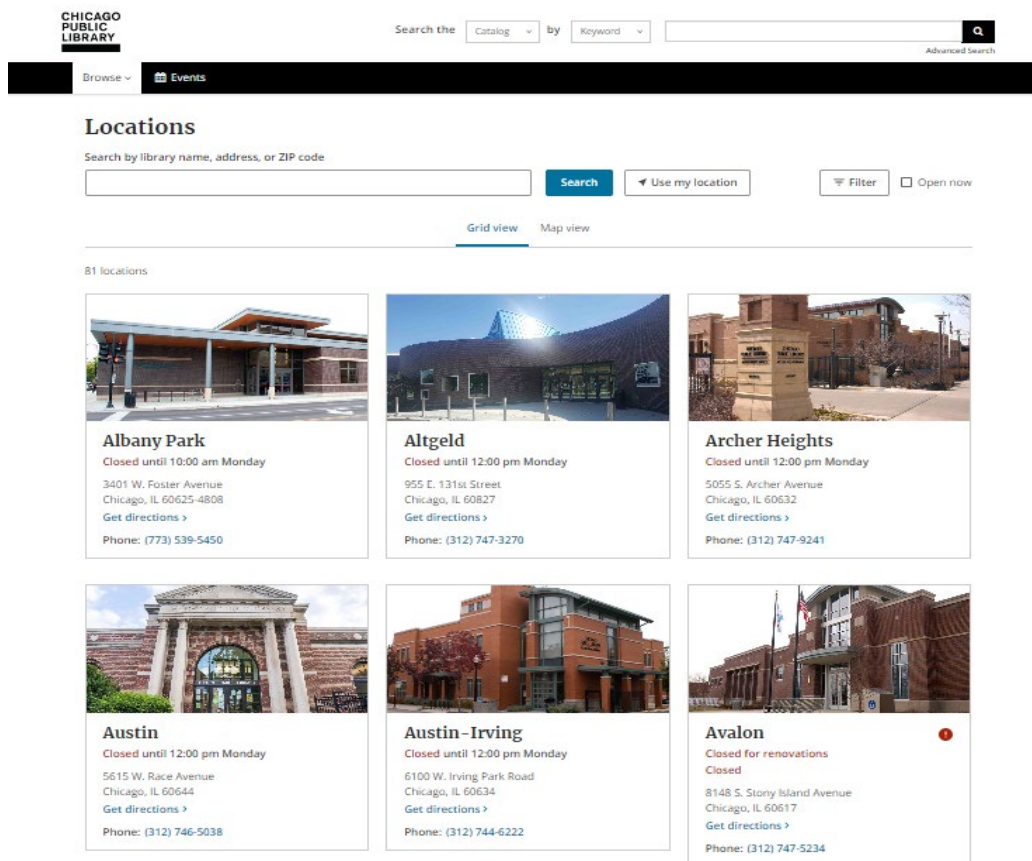


Figure 5. Screenshot of a page from the Chicago Public Library website with 81 Chicago Public Library profiles.

About Independence

▼ **Facilities**

- After-hours book return
- Bike rack
- Computers (close 30 minutes before the building does)
- [Meeting room](#)
- Parking lot
- [Scanner](#)
- [Study rooms](#)
- WiFi
- YOUmedia Recording Studio (for teens only)

▼ **Features**

- [Homework help](#)
- [Large-print materials](#)
- [Spanish-language materials](#)

➤ **Parking**

➤ **Accessibility**

Map

Teacher in the Library

Looking for help with school work? Join other kids and families for out-of-school learning support. Get help from a certified teacher to complete homework and improve study skills. Drop in for homework help and try Teacher in the Library in person.

Sessions available in English and Spanish. Schedule is subject to change. Please call to confirm availability.

LEARN MORE

Hours

Tuesday
3:30 - 6:30 p.m.

Thursday
3:30 - 6:30 p.m.


Figure 6. Example page of a library profile and the information available to me during data collection

Data on the non-traditional programming and features (see Table 2) was then collected over a period of two days by visiting each library profile with an eye for the variables in my list. The presence of said features was manually coded as a Boolean feature into an Excel spreadsheet.

Table 2. Library features as listed on the CPL website

Library “Feature”	Feature Definition & Notes
Citizenship Corner	Enhanced collections on immigration and U.S citizenship, free assistance, and dissemination of US Citizenship and Immigration Services (USCIS) publications in the languages most commonly spoken in Chicago.
Cyber Navigators	One-on-one sessions with technology tutors that build computer literacy and digital skills.
YouMedia	Teenager digital learning and makerspace
Teacher in the Library	Free drop-in homework help program for school-age students with accredited teachers
Mental Health and Social Services	Staffed with mental health clinicians or hosts a mental health focused organization.
Wi-Fi Hotspot Lending	A program that lends portable wifi hotspots that you can use to connect a mobile-enabled device to the internet.
Chromebook Kit Lending	A resident of Chicago with an active adult CPL card may borrow a Google Chrome laptop for three weeks.
Non-English Language Materials	The library provides a multilingual materials collection and circulates materials in a language other than English.

The library feature data set has certain limitations. It can only describe the presence of certain features because I was restricted by information that would consistently appear across the library profiles. For the purpose of this exploratory study, this is sufficient, however, I would encourage the collection of more granular data in future work. For example, programming over a

period of a couple of months or a survey with more specific metrics. I also assume that the features available on the Chicago Public Library profiles are up to date and representative of the actual services offered by those libraries. To supplement these  I also included measures for material circulation and visitation per library that were obtained from the Chicago Data Portal. Nonetheless, this study cannot possibly capture all of the possible and ever-changing services that libraries offer.

Part 3: Analyzing the Data

In order to assess the association between the availability of different services and the various neighborhood characteristics, a couple of methods were used. I mapped the sociodemographic variables onto the library service areas and the presence of library features. Then, I visually compared the maps for any visible spatial relationships or patterns. When considering traditional metrics and neighborhood characteristics I ran Pearson's correlation tests to consider the relationships between populations of LSAs and metrics like circulation and visitation. All data transformations, generation of spatial units and maps and statistical analyses were completed in RStudio from The R Project for Statistical Computing (version 4.3.1). An open-source research compendium is available on my GitHub page (@azalecki) where I have documented a more thorough workflow of my process.

Results

The first part of this chapter answers the first of my two research questions: How do library service areas differ along socio-economic and demographic lines in Chicago? I map socio-economic and demographic data from the American Community Survey onto the library service areas, and then analyze and discuss the visible patterns. The second section answers the second of my two research questions: To what extent do the socio-economic and demographic characteristics shape the services, programming and amenities available at these libraries? This section delves into the spatial distribution of traditional and non-traditional services provided by the Chicago Public Library. The focus of this part of the analysis is to explore the possible relationships between the provision of certain services and the characteristics of the local populations.

Question 1: How do library service areas differ along socio-economic and demographic lines in Chicago?

Descriptive statistics were used to summarize the distribution of certain socioeconomic and demographic variables across Chicago and are displayed in Table 3. One of the main takeaways from these results is the large range of values between most of the socioeconomic and demographic variables. For example, consider the foreign-born population in Chicago. On average, a library service area may contain around 5,299 foreign born persons. However, one library service area in Chicago contains as few as 57 foreign born persons while another contains as many as 25,840. This large range (25,783 persons) in values is indicative of high variability within the data which reflects the considerable heterogeneity of Chicago's neighborhoods. This high variability is observed in the other variables, as well, particularly among the racial and economic variables.

Table 3. Summary table of descriptive statistics for demographic variables

	Median	SD	Min	Max
Demographic Variables				
Total Population	33,134	13,906	7,892	68,729
Child	5,333	2,489	1,500	14,002
Senior	8,194	3,322	1,254	18,431
Female	16,468	6,833	4,042	35,930
Racial & Ethnic Variables				
Black	5,856	10,370	70	41,499
Asian	1,113	2,957	0	12,114
Latinx	5,702	10,691	225	49,158
White	5,830	12,162	26	51,128
Economic Variables				
Unemployed	8,759	3,529	2,360	21,640
Poverty Status	5,411	3,086	977	13,907
High Income	1,371	3,073	79	14,467
Social Variables				
Foreign Born	5,299	5,693	57	25,840
Attained Degree	4,801	5,475	445	26,028

N= 81

Spatial distribution of demographic variables

Figures 1 to 4 present the spatial distribution of the demographic variables across the library service areas.

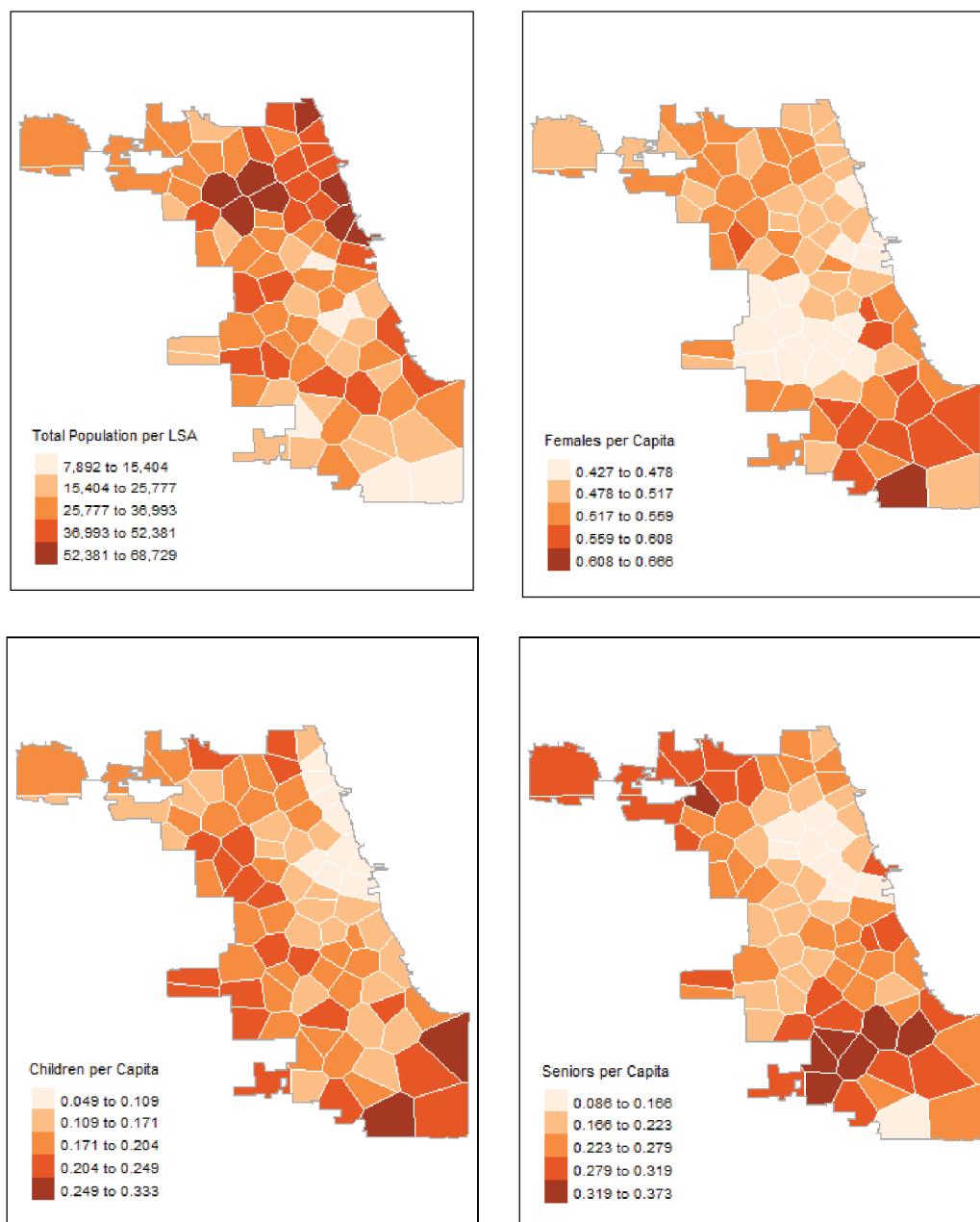


Figure 7-10. Demographic Variables

As expected, there is little variation in the gender composition of the library service areas. However, other demographic indicators show more distinct geographies like age.

The smallest proportion of the child populations are located in downtown Chicago and the Northeast Side along the coast of Lake Michigan. There, children make up as little as 4.9-10.5% of the population per service area. On the other hand, LSAs with the largest child populations were Altgeld (33.3%), South Chicago (26.8%), Scottsdale (24.9%) which are all located on the Far South Side.

The patterns of the senior population slightly differ from patterns of the child population. Moderate sized senior populations can be found across the city with the smallest populations located on the North Side of Chicago. Larger proportions of the senior population can be found on the Far North Side, Northwest Side and throughout the South Side. The LSAs serving the largest population of seniors were Beverly (37.2%), Avalon (36.4%) and Vodak-East Side (35.8%) which are all on the South Side.

Spatial distribution of race and ethnicity variables

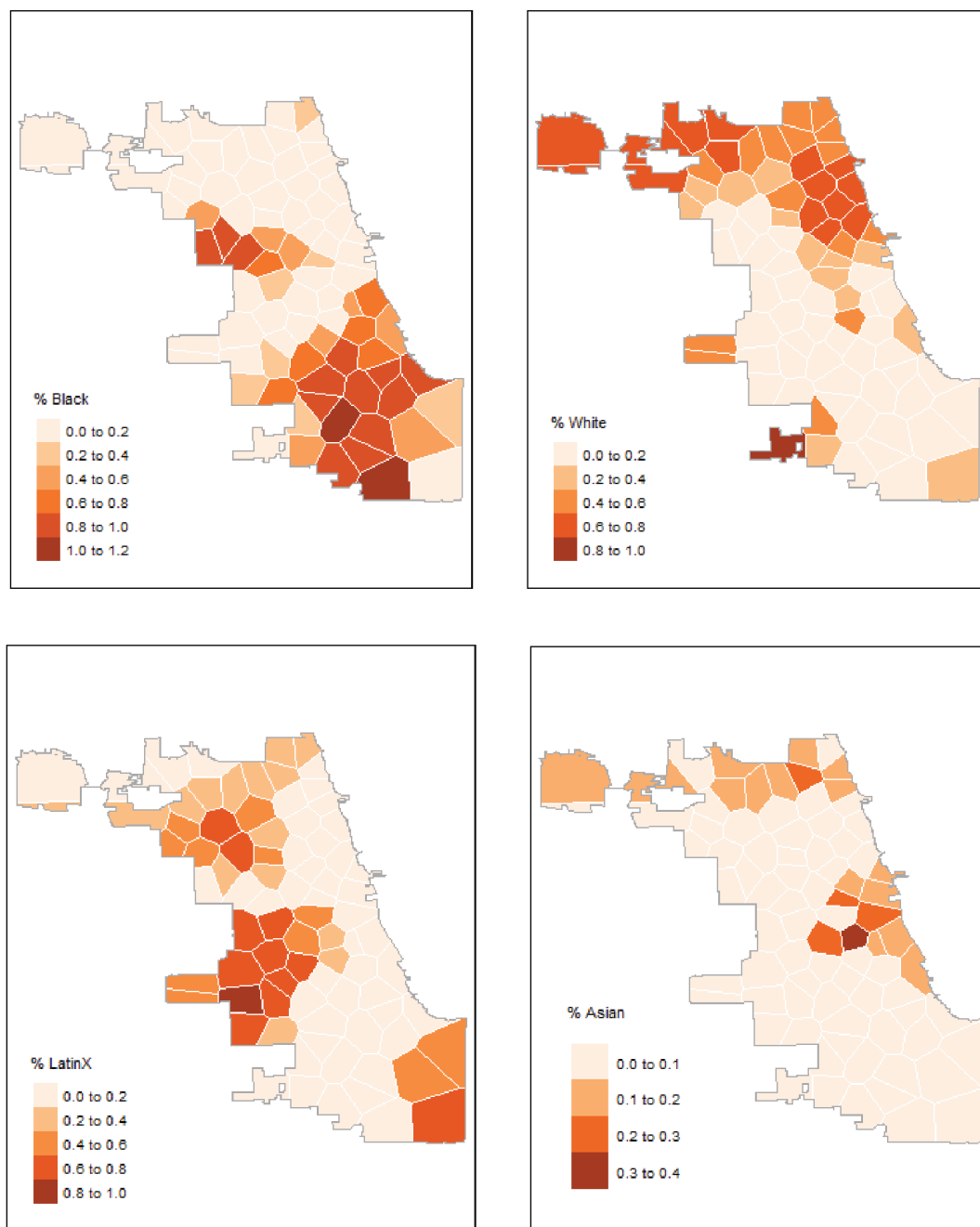


Figure 11-14. Racial and Ethnic Variables

Figures 5 through 8 present the spatial distribution of the racial and ethnic variables across the library service areas. Mapping the percentage of a certain racial and ethnic groups onto the library service areas, the lines of racial segregation become particularly apparent. Racial groups are highly concentrated in different parts of the city with some library service areas having as much as 80-100% of a certain racial group.

The Black population is primarily located in LSAs on the South and West Sides of the city. The white population is primarily located on the North Side of the city however you can also see a handful LSAs on the South Side exhibiting high white populations. The Latinx population is predominantly concentrated on the Southwest and Northwest Sides of Chicago. This corresponds to established and well known Latinx neighborhoods: Pilsen and Little Village (in the Southwest Side) and growing populations in the Northwest Side: Hermosa and Belmont-Cragin. Chicago's Asian population is the fastest growing in the city but predominantly concentrated in small clusters in and around the Near South Side of Chicago as well as a part of the Far North Side. Concentrations of the Asian population around the Near South Side are no surprise considering the region's proximity to the cultural hub that is Chicago's Chinatown and long-established immigrant communities in the area.

The distribution of race that we see among the LSAs affirm the patterns of segregation that have long been documented in Chicago's urban landscape (Taeuber & Taeuber, 1964; Erbe, 1975; Acs et al., 2017) and demonstrate that these patterns also influence the demographic makeup of the LSAs. Libraries in different parts of the city will be serving communities made up of different racial and ethnic majorities.

Spatial distribution of economic variables

Economic indicators show similar spatial variation across Chicago's library service areas (Figures 5-8).

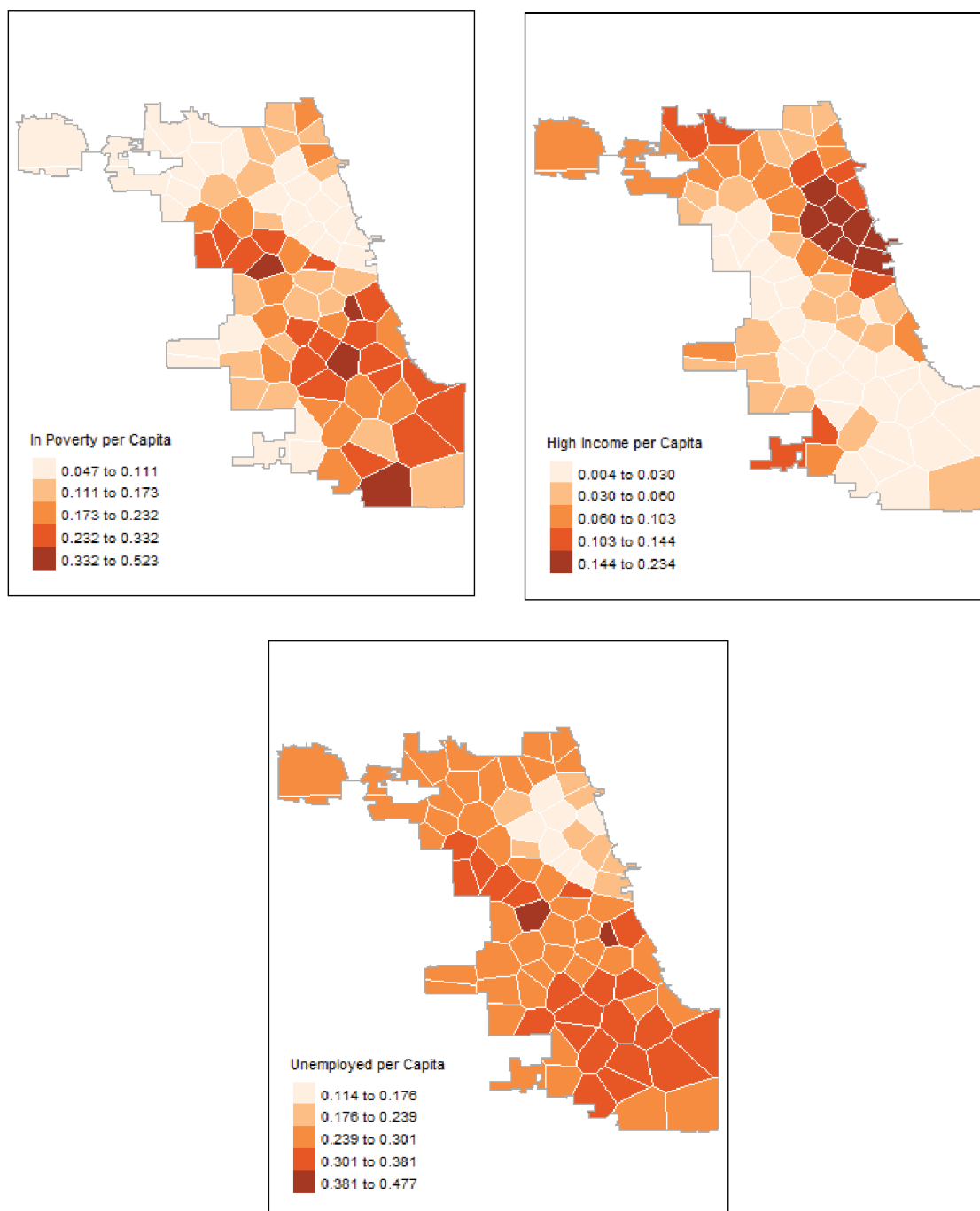


Figure 15-17. Economic Variables

In terms of economic variables, library service areas were heterogenous and demonstrated clearly visible spatial patterns of economic segregation. Most LSAs across the city of Chicago exhibited at least 20-30% of their total population facing unemployment in 2021 (see Figure 2). One possible explanation for the breadth of unemployment across the city is revealed by contextualizing this data in recent history. The closure of non-essential businesses and the economic recession that followed the COVID-19 pandemic resulted in a significant drop in civilian employment across the United States. Although the unemployment rate in the United States declined in 2021 from beginning pandemic levels, the unemployment rate still averaged to 4.2% in the fourth quarter of 2021 which approximates to 6.8 million people nationwide (Edwards & Essien & Levinstein, 2022).

Yet, one part of Chicago seemed to go relatively unscathed in terms of unemployment in comparison to the other library service areas. The Northeast Side exhibited as little as 11.4-17.6% of unemployment within their library service areas. This same neighborhood is also characterized by a higher proportion of households with high annual incomes of at least 150k a year (Figure 10). LSAs with the largest proportions of high-income households were the West Loop (23.4%), Popular Library at Water Works (22.8%) and Near North (20.6%). The remaining parts of Chicago are generally varied in terms of economic metrics. The South and West Sides of the city demonstrate relatively large populations of people determined to be living in poverty with a handful of LSAs that are particularly impoverished: Altgeld (52.3%), Kelly (38.9%), Chicago Bee (38.5%), and Douglass (37%).

Spatial distribution of social variables

Figures 18 and 19 present the spatial distribution of the social variables across the library service areas.

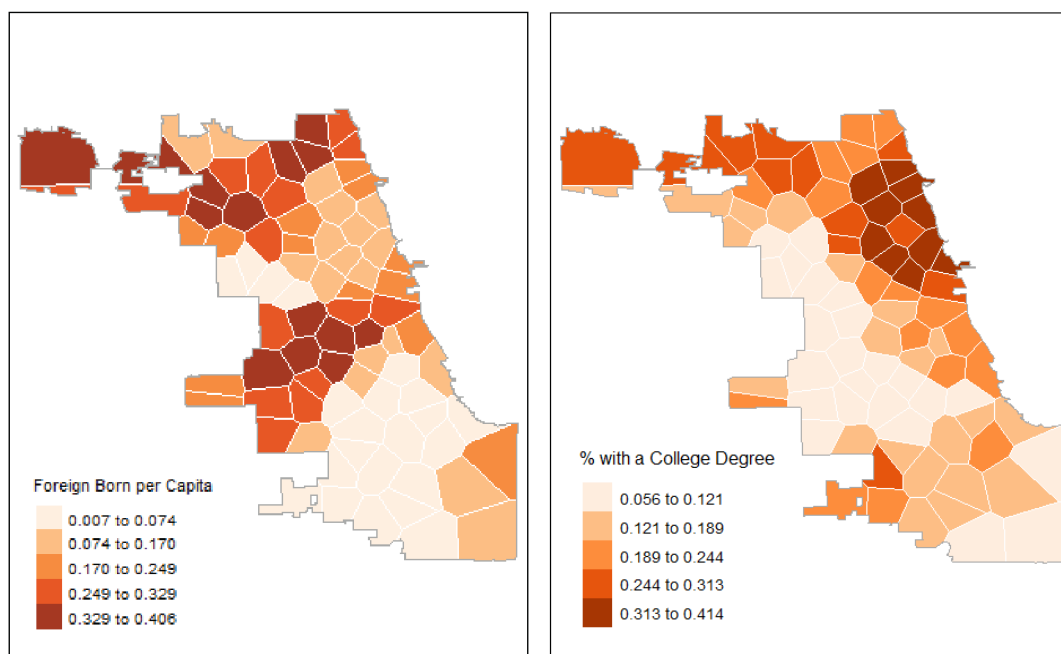


Figure 18-19. Social Variables

According to the Chicago Metropolitan Agency of Urban Planning (2014), immigrants make up approximately 21.2% of the total population in Chicago. The foreign-born population in Chicago is highly concentrated in two belt like regions on the West and the Northwest Sides of Chicago. Most of the foreign-born population can be found in library service areas in or around those to belts. It seems that the LSAs on the North Side relatively have more foreign born per capita than the south side. Most of the LSAs on the South side except for a few on the Far Southeast Side exhibit a proportionally small foreign-born population (0.7-7.4%).

The LSAs with the largest population that attained a degree were located in the same region as the LSAs with the higher proportions of households with high annual incomes.

Considering that typically, college graduates earn 86% more than those with a high school diploma this pattern may be unsurprising (The Association of Public and Land-grant Universities, 2024)

Summary

Library service areas are not homogenous across Chicago and differ in their racial economic and social compositions. An analysis of the descriptive statistics of the socioeconomic and demographic variables revealed a wide range of values with significant variations. Mapping the variables onto the LSAs also revealed the distinct patterns in their distribution across the city which indicate severe racial, economic and social segregation. These findings emphasize significant differences in the population characteristics among library service areas in Chicago and confirm the existence of heterogeneity.

The presence of spatial variation is relevant in part to the clusters of advantage and disadvantage that the maps have revealed. More advantaged populations marked by higher incomes and educational attainment are on the North side of Chicago while the LSAs on the South side tend to be home to lower income and black populations. Challenges faced by disadvantaged neighborhoods like underfunded schools, limited access to the internet or fewer job opportunities may affect the targeted efforts of local libraries. Recognizing these patterns therefore enriches our understanding of how libraries in different areas across the city may be used by their local populations.

To what extent do the socio-economic and demographic characteristics shape the services, programming and amenities available at these libraries?

In the second step of the analysis, I explore the ways in which library services vary across space with a focus on how the services correspond with the varying characteristics of their local populations. I first consider traditional library services followed by a consideration of the non-traditional services in the later part of this section.

Analysis of “traditional” library services

Table 2. Descriptive statistics of Traditional Metrics

Variable	Mean	SD	Min	Max
Circulation	41,780.90	51,592.94	2,641	301,340
Visitation	56,378.20	78,801.97	109,60	686,752

N= 80

Based on the description found in the Chicago Data Portal, circulation is composed of the total of new checkouts, renewals, and downloadable media/materials. In 2021, 3,342,472 library materials were circulated. Across the 80 libraries, that amounts to 41,781 materials on average. However, patterns of circulation were not evenly distributed across Chicago. Higher rates of circulation were mostly observed in the center and North side of the city (see Figure 9). The spatial distribution of circulation seems to coincide with the spatial distribution of the white population, as well. Library service areas with a white racial majority showed higher circulation numbers per capita. A Pearson’s correlation analysis revealed a highly significant and fairly strong positive correlation between circulation and the number of white people in a library

service area, $r(78)=0.701$, $p=4.591e-13$. Circulation and the number of people with high annual incomes in a library service area were also found to have a highly significant but moderately strong positive correlation, $r(78) = 0.607$, $p = 2.228e-09$.

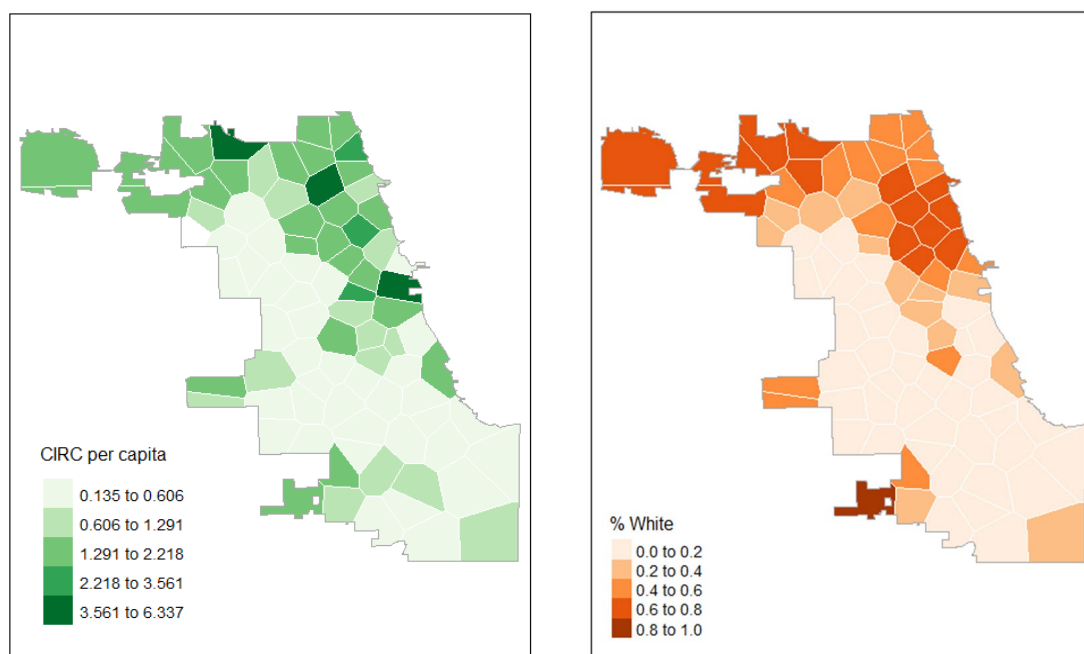


Figure 20. Circulation per capita compared with Percent of White Population per library service area.

In terms of visitation, libraries received an average of 56,378 visitors in the year 2021. The range of visitation, however, is notably large of 577,152 visitors. This indicates a large disparity in the numbers of visitors between the 81 libraries. The clustering of visitation is not incredible apparent when mapped but certain libraries in both the major North and South sides showed moderate to high visitation per capita (Figure 14). Visitation was overall less concentrated and less clustered than circulation.

An interesting pattern is revealed when you compare the maps of circulation and visitation per capita. There are at least a handful of libraries that exhibited some of the lowest rates of circulation but higher rates of visitation. This pattern is particularly visible among

libraries in the South side. For example, Altgeld, which had the lowest circulation count (2,641) of all the 80 libraries in the survey had at least 10 times more visitation counts (38,946). This may imply that circulation may be only partially driving visits in certain parts of the city whereas in other parts people are visiting the library for reasons other than to check out print materials.

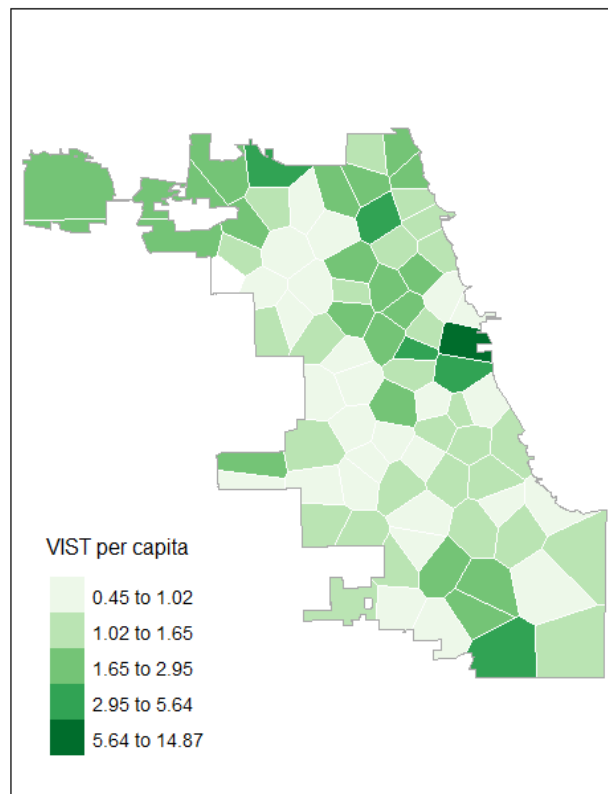


Figure 21. Library visitation per capita

Not only does the data demonstrate large ranges that indicate high variability among the circulation and visitation across the library service areas, there also exist significant outliers among the data (see Table 3). Harold Washington appears as an outlier across the three metrics of traditional library use. Located in downtown Chicago, the Harold Washington Library stands

10 stories tall and one of the largest public library buildings in the world (Chicago Loop Alliance, nd). Its architectural features as well as unique programming make it as much a tourist destination as just another local library. Considering Harold Washington Library's role as the central library in the CPL system, its identification as an extreme outlier does not come as a surprise.

Table 3. List of Positive Outliers among Traditional Metrics

Metrics	Positive Outliers
Circulation	Harold Washington* Lincoln Park Sulzer Regional*
Visitation	Chinatown Harold Washington* Lincoln Park Logan Square Sulzer Regional*

* = identified as an extreme outlier

Additionally, one of the three regional libraries, Sulzer, and Woodson, appeared as an extreme positive outlier in both circulation and visitation. The regional libraries of Chicago benefit from more physical space, larger collections, more staff, and longer hours (Freund, 2019). With more resources and offerings these libraries exhibit higher levels of circulation and visitations compared to their neighborhood branch counterparts.

Analysis of non-traditional library features

The functions of a library have expanded substantially and continue to evolve to meet community needs. These functions may no longer align with the traditional definition of library services since libraries have outgrown their original form as a place to just check out books. This next section examines the nontraditional library services that are provided by the Chicago Public Library and analyzes how they vary across the city.

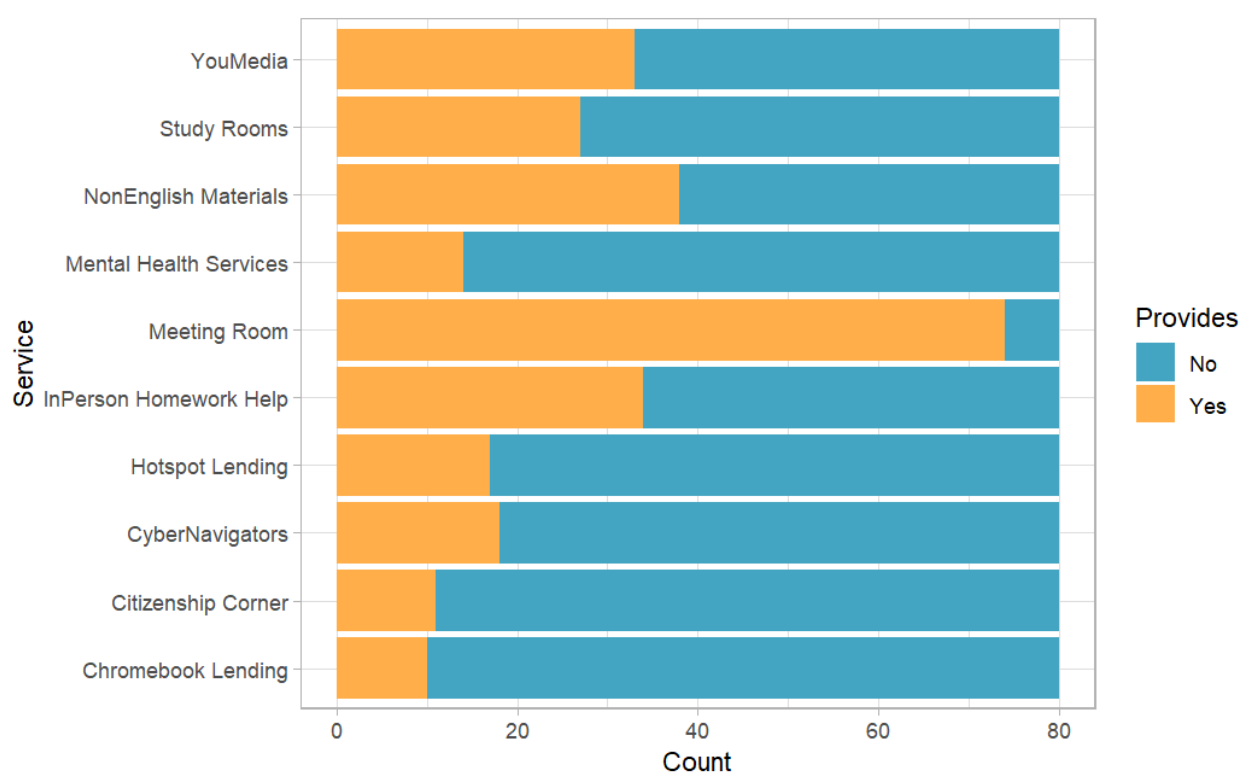



Figure 22. Proportion of non-traditional services provided by libraries in the CPL system.

Some non-traditional services were found in almost all public libraries including access to computers, meeting rooms and homework help. All 80 libraries had computers available at their facilities while 93% of libraries had a meeting room and 96% offered some form of

homework help. Other nontraditional services were much less common across the Chicago Public Library system.  Figure 17 displays the proportion of libraries providing a range of different non-traditional services that were identified in the survey of library web profiles. Less than 50% of libraries offered services like: In Person Homework Help (43%) materials in a language other than English (48%), availability of study rooms (34%), and YouMedia programming (41%). Less than 25% of the 80 libraries offered other kinds of non-traditional services like Cyber Navigators (23%), Citizenship Corner (14%), Mental Health & Social Services (18%), and Hotspot Lending (21%).

Nontraditional services vary considerably across the Chicago library service areas, and the final part of the analysis examines if any particular social/economic/demographic characteristics are associated with the presence or absence of these nontraditional services.

This next section inquires into the extent to which socio-economic and demographic factors shape the presence of these services. The section is divided into three different categories of non-traditional library services: social services, makerspaces, and non-traditional lending.

Category 1: Social Services

Fewer than 20% of Chicago Public Library branch libraries provide Mental Health Services and Citizenship Corner.

A. Mental Health and Social Services

"Mental Health and Social Services" is a generic term used by the Chicago Public Library to describe a collective of different services offered by the system. There is no cohesive program in regard to mental health support and the services that one library provides may not be the same as another. One site on the CPL website describes the various resources that constitute the "Mental Health and Social Services" program that is available at select libraries across the city. These services include hosting 3rd party professionals like care delegates, mental health care clinicians, social services agencies, mobile crisis vans, and organizations like Nourishing Hope and Trellus. For example, through the organization Trellus, libraries like Bezazian and Sulzer Regional, support immigrant and refugee communities by providing behavioral health services. Other libraries, like Beverly and Edgewater, also offer mental health services through mental health care clinicians provided by the Chicago Department of Health. Clinicians at Beverly can provide immediate intervention for mental health support but may not be trained in language skills and the cultural sensitivity to work with foreign-born communities like the organization at Bezazian.

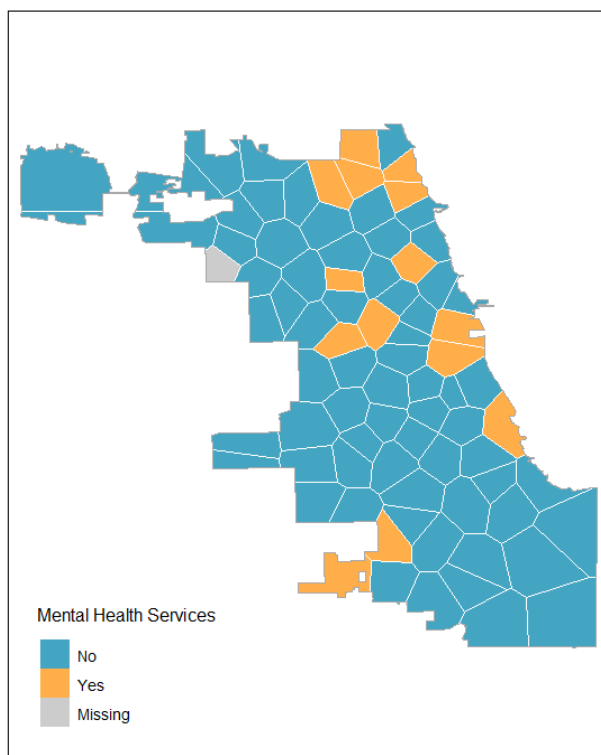


Figure 23. Library service areas that list Mental Health Services on their library profiles

Libraries that provided mental health services were mainly located in Central Chicago and the North Side. Very few libraries in the South Side provide any kind of mental health services. Those that do are located on the outskirts of the South Side, either near Central Chicago or on the Far Southwest Side near the Oaklawn neighborhood.

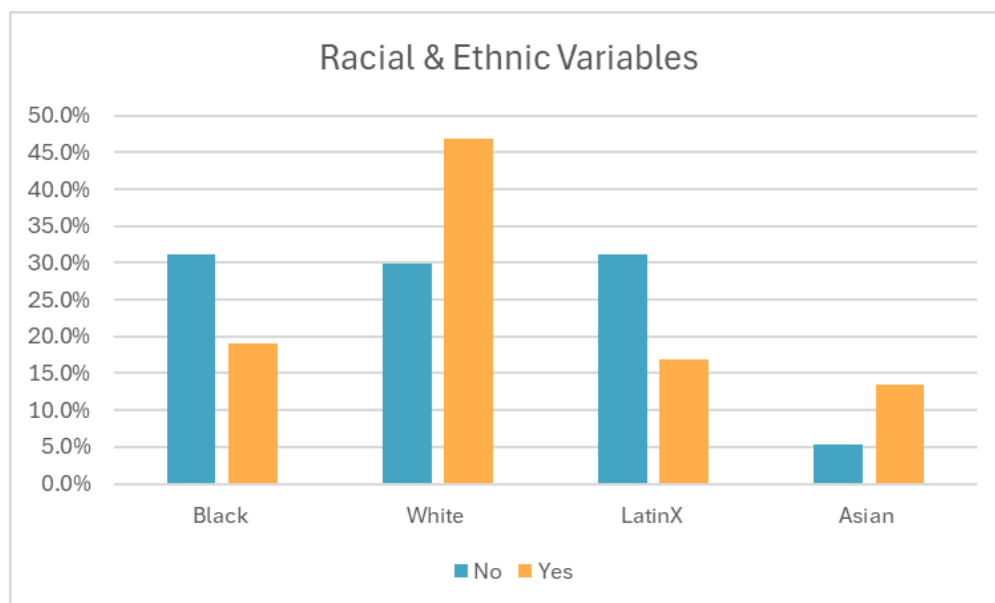


Figure 24. Racial and Ethnic Characteristics by Provision of Mental Health Services

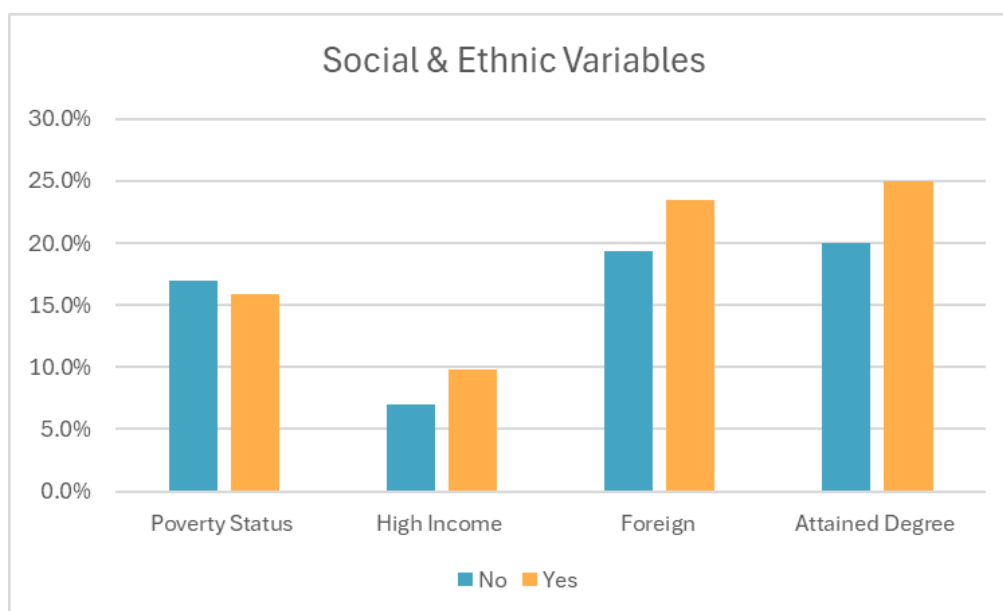



Figure 25. Social and Economic Characteristics by Provision of Mental Health Services

LSAs that provide mental health services are proportionally whiter (46.8%) and Asian than the LSAs that do not provide these services. On the other hand, LSAs that provide mental health services are proportionally less Black (19.1%) and Latinx (16.9%) compared to the

libraries that do not. LSAs that provide mental health services have proportionally larger populations that are considered high income (9.8%), foreign born (23.5%). Libraries that provide mental health services have a larger proportion of the total population that has earned a college degree (25%).

B. Citizenship Corner

 Citizenship Corner is a program that, as stated by CPL, includes distributing United States Center for Immigration Services (USCIS) materials, maintaining enhanced collections on immigration and offering free assistance with the naturalization process. Libraries with Citizenship Corners are reported to work with local community-based organizations and immigrant networks as well as host citizenship workshops.

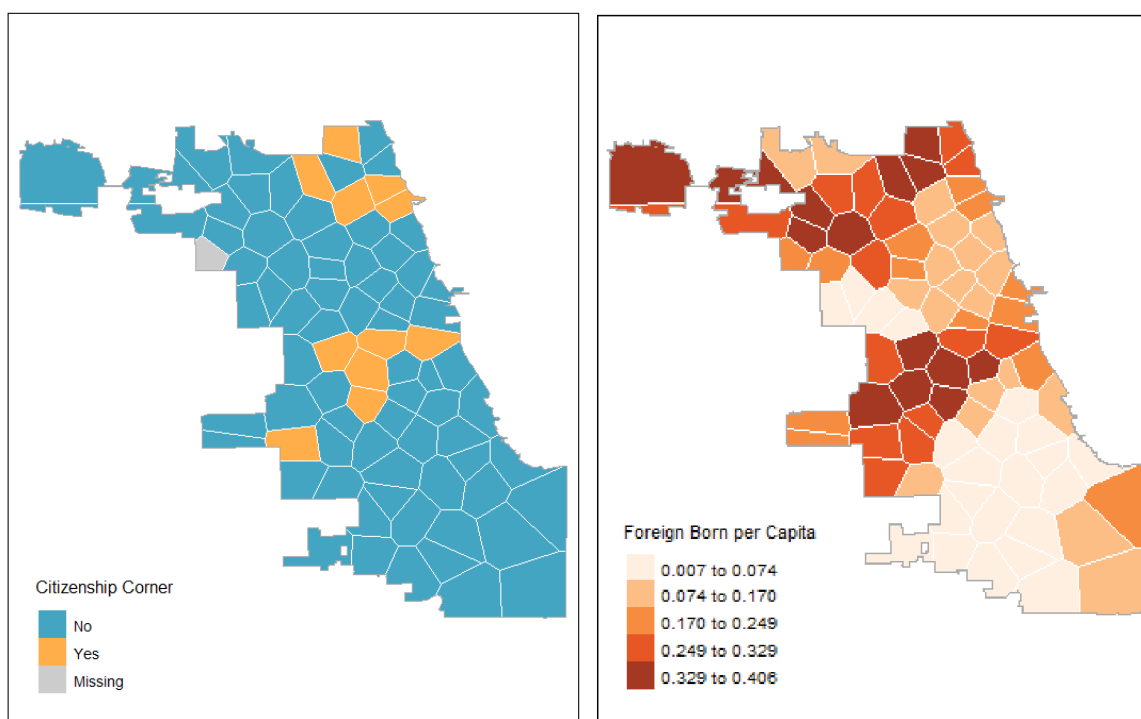


Figure 26. *Library service areas that list Citizenship Corner on their library profiles compared with Map of Foreign Born per Capita.*

One would assume to find libraries with Citizenship Corners in neighborhoods with large immigrant populations. To an extent, the results meet that assumption. Libraries that were identified as having Citizenship Corners were predominantly located in or near LSAs with foreign-born populations ranging from 20-40%. However, a visual comparison between the distribution of foreign born per capita and libraries that provide Citizenship Corner services reveals some gaps in services. Large foreign-born populations can be identified on the Far West and Northwest sides of Chicago, yet these populations are located far from libraries offering Citizenship Corners. On the Far West side one library is noted to provide a Citizenship Corner while the Northwest Side exhibits none.

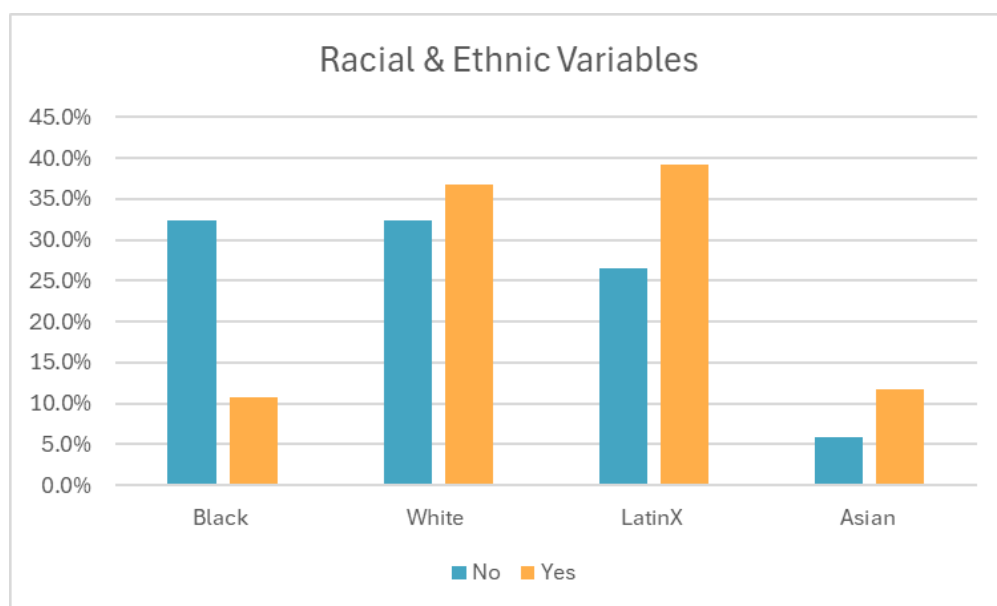


Figure 27. Racial and Ethnic Characteristics by Provision of Citizenship Corner

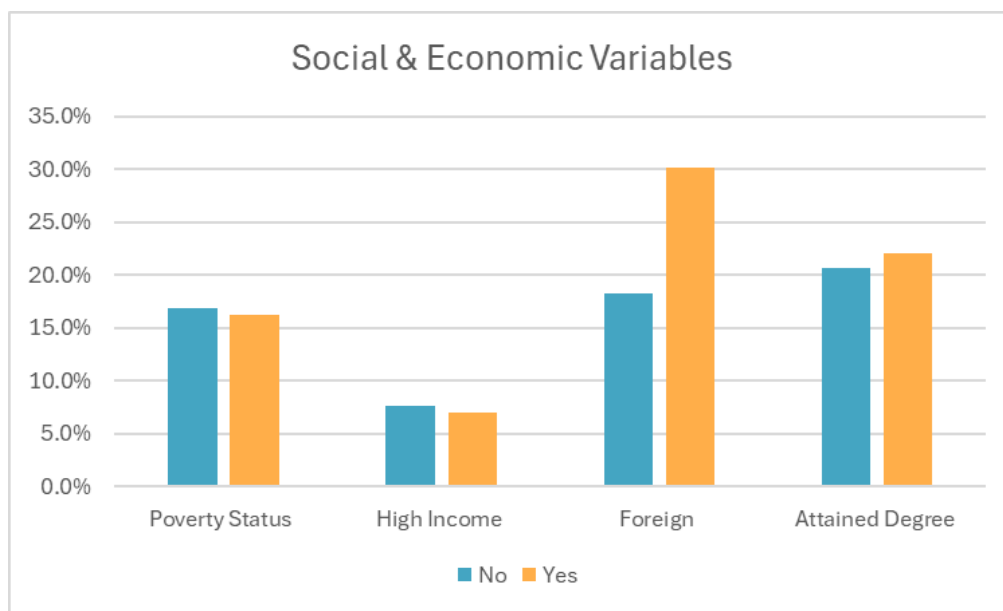


Figure 28. Social and Economic Characteristics by Provision of Citizenship Corner

LSAs that provide Citizenship Corner services have larger White (36.8%), Latinx (39.2%) and Asian (11.7%) populations compared to those that did not. On the other hand, LSAs that do not provide Citizenship Corner services had a larger Black population (32.3%) as opposed to the LSAs that provide Citizenship Corners (10.7%).

As expected, the LSAs that provide Citizenship Corner had almost double the foreign-born population (30.1%) than the LSAs that did not (18.2%). The proportion of the population that is poor and high incomes between LSAs that do versus those that do not have Citizenship Corner was relatively even but LSAs that do provide Citizenship Corner had slightly smaller populations of both people in poverty and those with high incomes. This may seem contradictory, but the reality may be the populations in LSAs that provide Citizenship Corner may be largely made up of the middle class rather than at the extremes of the class structure.

Category 2: Makerspaces

The first YouMedia learning space, in partnership with Digital Youth Network, opened in the Harold Washington Library Centre in 2009. As of 2023, YouMedia makerspaces appeared on the library profiles of 33 library locations (41% of libraries). The CPL website outlines YouMedia as a designated teenager makerspace with an emphasis on digital media, invention, and hands-on learning. Depending on the location, YouMedia spaces come equipped with free to use cameras, music and gaming equipment, 3D printers, vinyl cutters and other creative technologies.

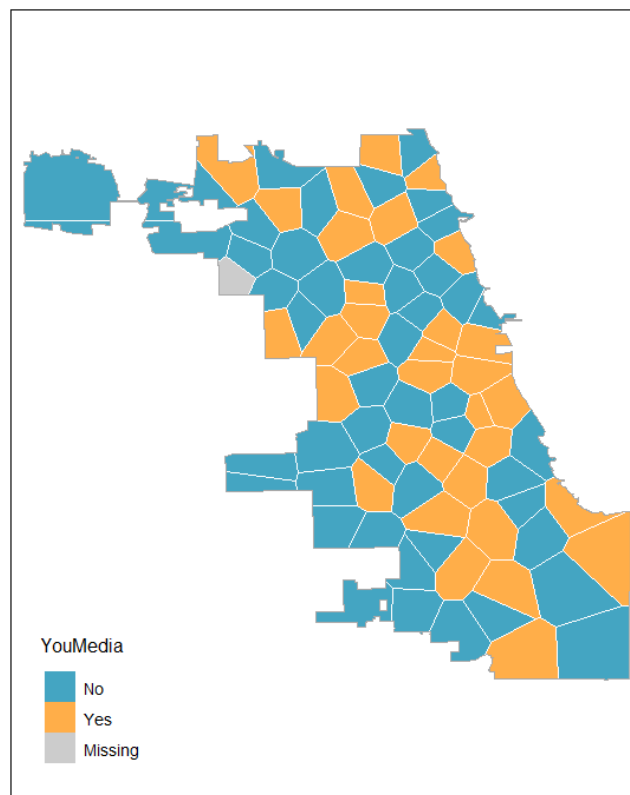


Figure 29. Library Service Areas that provide YouMedia in Chicago

Unlike the other non-traditional services in this study, when mapped, YouMedia locations were the most distributed program across the city and not necessarily limited to one “Side” or neighborhood.

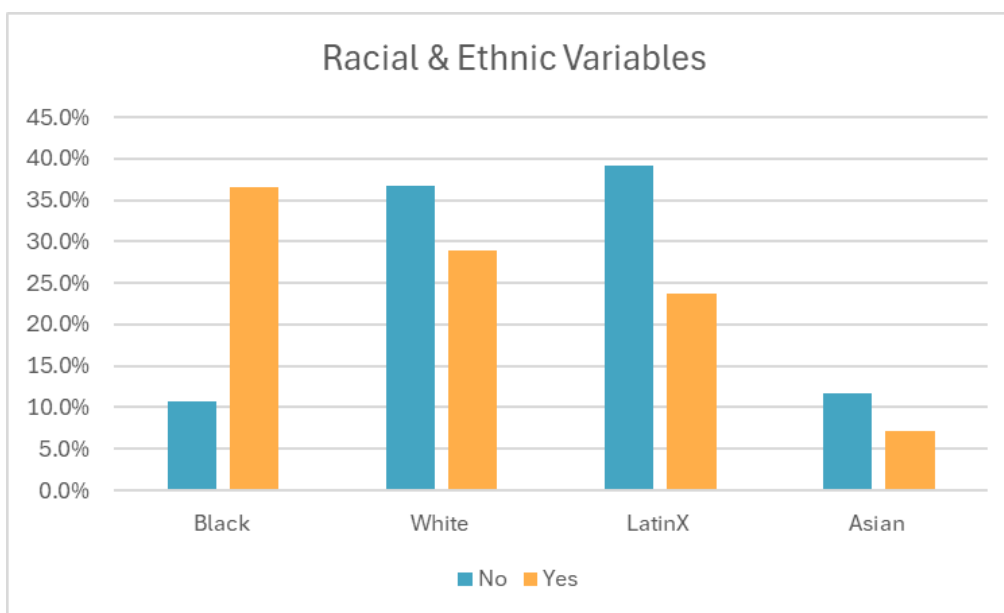


Figure 30. Racial and Ethnic Characteristics by Provision of YouMedia

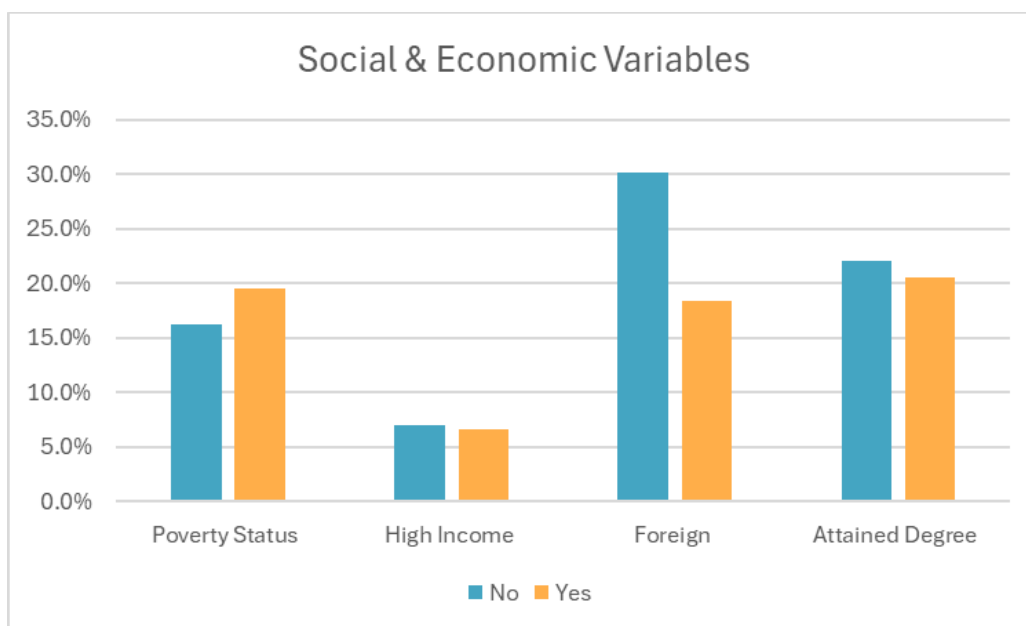


Figure 31. Social and Economic Characteristics by Provision of YouMedia

YouMedia services, however, were more likely to be found in neighborhoods with higher black populations. The wide majority of neighborhoods with libraries that provided YouMedia services were located in the majority of black neighborhoods. YouMedia services were less likely to be found in the neighborhoods with other racial majorities as well as neighborhoods with large foreign-born populations. Based on this data, it seems that the LatinX population in Chicago is somewhat underserved in terms of having local access to creative teenager spaces.

Category 3: Non-traditional Lending

The final non-traditional programming considered was lending services. In recent years libraries have expanded their circulation collections to include “non-traditional circulating materials” in addition to print and electronic reading materials. The Public Library Association has collected a review of literature and outlines some examples of non-traditional circulating materials like mobile Wi-Fi hotspots, e-readers, mobile devices, seeds, artwork, kitchen tools, appliances, and many other “things” (American Library Association, 2016). The Chicago Public Library has an established collection of non-traditional circulating materials in the Uptown neighborhood branch in Buena Park on Chicago’s Far North Side. Fittingly named the “Library of Things,” this collection has a variety of items available that library card holders can check out from kitchen appliances and DVD players to corn hole sets. This collection is unique since it is the only one of its kind in the whole public library system.

An investigation of the library profiles revealed the existence of a broader and wider reaching non-traditional lending program that involves the lending of mobile Wi-Fi hotspots and Chromebooks. The Internet To Go program began with a pilot in 2014 with the idea that any

resident of Chicago with an active library card can check out a mobile Wi-Fi hotspot and/or a google Chromebook for three weeks. These short-term loans are an attempt to promote digital inclusion, bridge the technology gap and deal with digital deserts where there is no or very limited access to the internet.

Out of the 80 libraries surveyed, there were 17 libraries (21%) that carry hotspots and 10 libraries(12%) that carry Chromebooks.

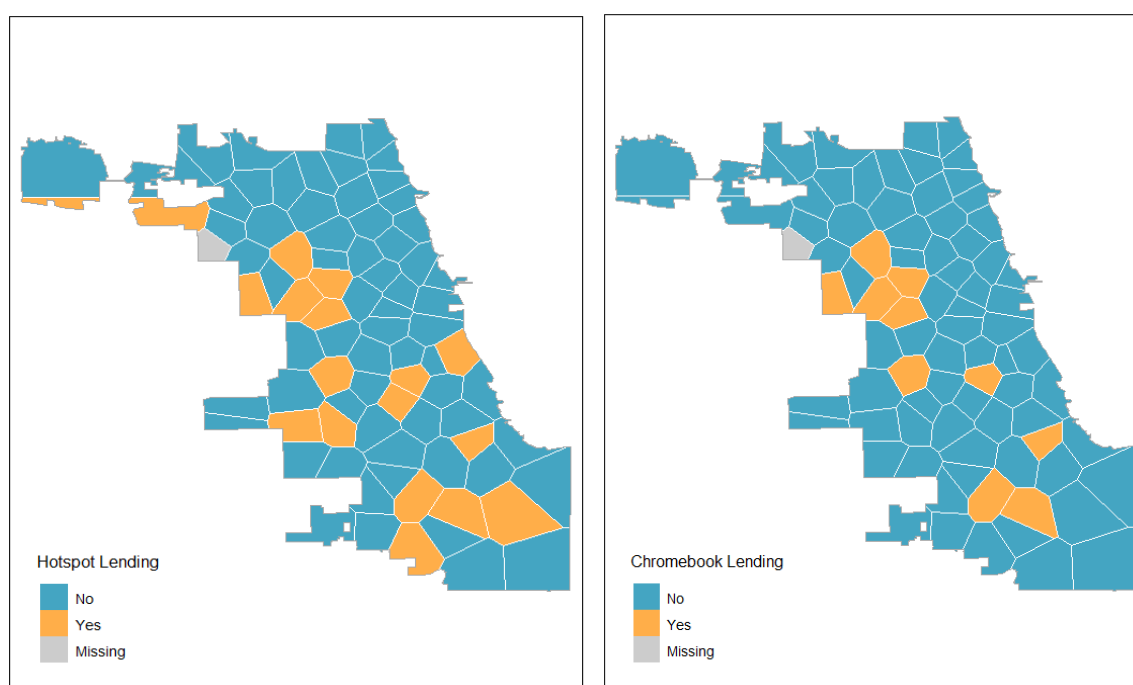


Figure 32 & 33. Library Service Areas that provide Hotspot Lending in Chicago (Left) and Library Service Areas that provide Chromebook Lending in Chicago (Right)

Libraries that provide lending of hotspots are predominantly located on the South and West sides of the city in what appear to be small clusters (Figure 31). There are almost no libraries that carry hotspots on the North and Far north side and one library on the Northwest side (name library). Similarly, libraries that provide lending of Chromebooks follow this pattern

but shrink in magnitude. All libraries that provide Chromebook lending also provide mobile hotspot lending but not vice versa.

It is unclear whether the materials that are part of the Internet To-Go program are counted within the circulation metrics but unlike print materials that can be put on hold and transported from library to library, hotspots and Chromebooks may only be picked up at locations that carry these devices. This stipulation inadvertently creates a barrier to access since people that do not live within a service area that provides hotspot/Chromebook lending, must travel to an area that does in order to participate in this program.

According to a study by the University of Chicago Data Science Institute, there are large disparities in internet access across the 77 Chicago community areas. Researchers not only identified associations between internet connectivity and individual factors but found that neighborhoods with higher percentages of Black populations also had less households with internet access. These community areas with the lowest percentages of internet access were neighborhoods located on the South and West Sides of Chicago. The libraries with hotspot and Chromebook kit lending identified in this study parallel the findings from the study by the Chicago Data Science Institute.

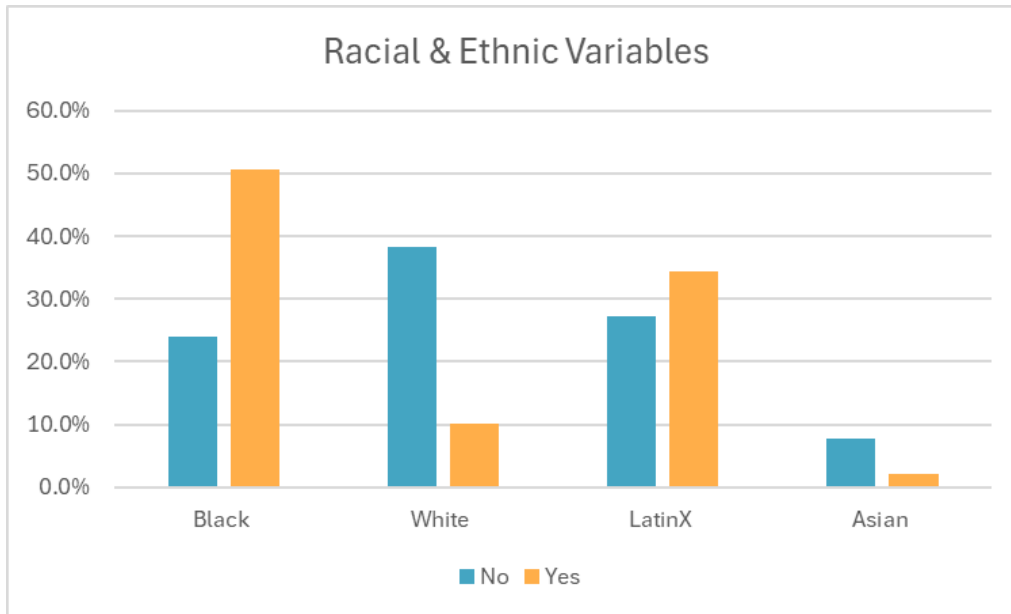


Figure 34. Racial and Ethnic Characteristics by Provision of Hotspot Lending

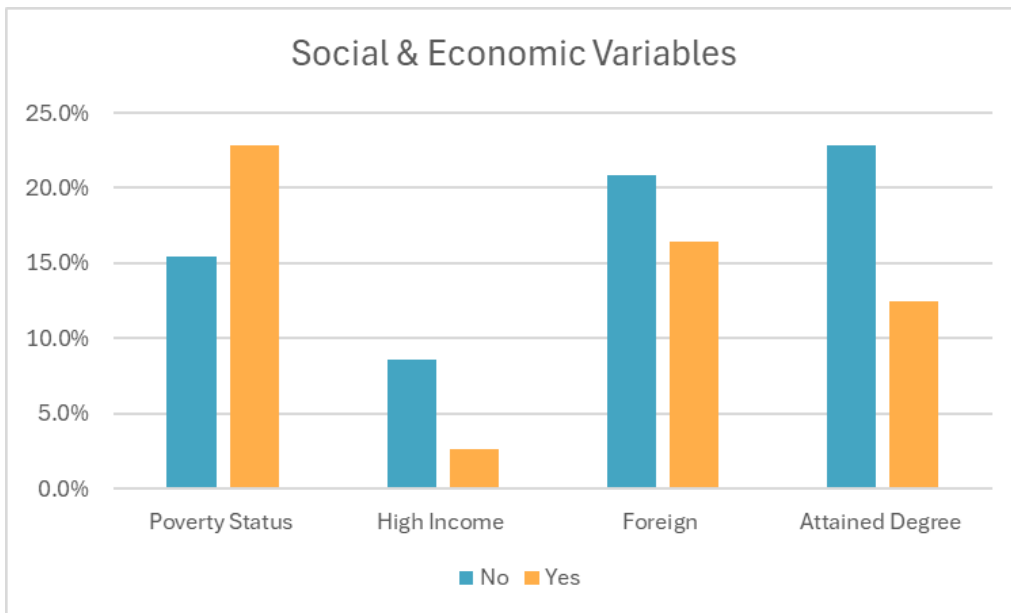


Figure 35. Social and Economic Characteristics by Provision of Hotspot Lending

The demographic makeup of LSAs where hotspot lending is provided is proportionally more Black (50.6%) and Latinx (34.3%) than white (10.2%) and Asian (2.2%). The difference between libraries that did and did not provide hotspot lending in regard to the proportion of the Black population is clear. The proportion of the Black population in LSAs that provide hotspot lending (50.6%) is more than half of the proportion of the Black population in LSAs that do not provide hotspot lending (23.9). In stark contrast, the white population in LSAs that provide hotspot lending is 10.2%.

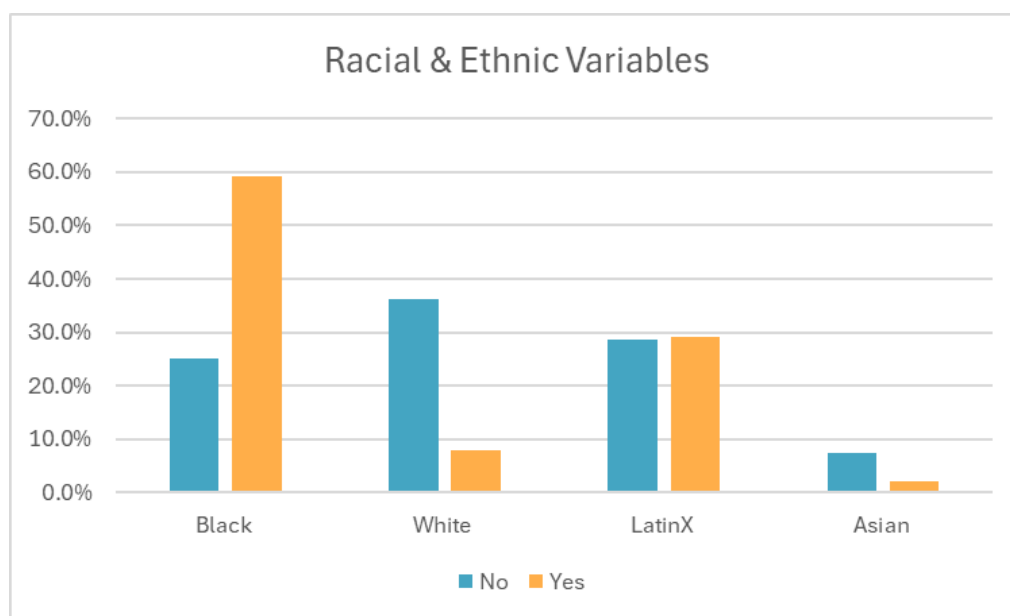


Figure 36. Racial and Ethnic Characteristics by Provision of Chromebook Lending

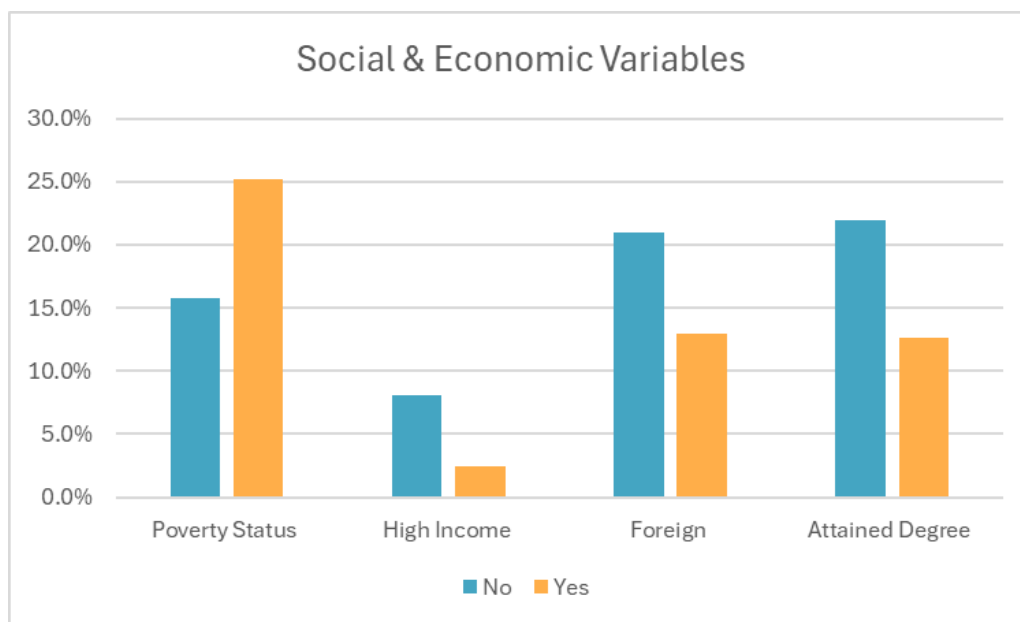


Figure 37. Social and Economic Characteristics by Provision of Chromebook Lending

Patterns of race and ethnicity observed in libraries that provide Chromebook kit lending reiterate those found in libraries that provide hotspot lending - except more extreme. The Black population accounted for nearly 60% of the total population while the white population accounted for less than 10% of the total population in LSAs that provided Chromebook kit lending. The population of Latinxs was mostly even between libraries that did and did not provide Chromebook kit lending. The Asia population was slightly proportionally larger in the LSAs that do not provide Chromebook kit lending.

In terms of economic factors, LSAs that provide Chromebooks for lending were proportionally poorer than the LSAs that did not. On the contrary, LSAs that did not provide Chromebook kit lending were generally richer and higher educated. The LSAs that did not provide Chromebook kit lending also had a proportionally larger foreign population.

Summary

Maps of traditionally used metrics like circulation and visitation showed an intense disparity between the North and South sides. Mapping circulation and visitation revealed high concentrations of both metrics in central and North Chicago where predominantly white, affluent and college educated population reside. On the other hand, mapping non-traditional services onto the library service areas revealed different patterns. LSAs across the city exhibited varying levels of provision of non-traditional services depending on the program studied in the analysis. For instance, mental health services tended to be more pervasive in LSAs with higher proportions of white and Asian populations while Chromebook lending was primarily serving Black and Latinx population. Neighborhood level variations in non-traditional library services signifies that libraries are filling gaps in the amenities and infrastructure available in those neighborhoods. Or possibly that the presence of certain types of populations necessitates the existence of certain programs to cater to their specific needs. We also see that although these programs exist in neighborhoods that need them, other parts of the city that could also benefit from these programs do not have them at their local libraries.

Discussion

“The overall sense of the city’s genius loci - its spirit, its vitality, its splendor and successes, and the joys of urban life are visible in public space, as are its struggles, squalor, sufferings and conflicts” (Mehta, 2022).

Observing patterns of variations of library uses allows us to understand patterns of inequity and access across Chicago’s urban landscape. People and communities are not guaranteed to be homogenous across space, therefore, it is important to study these spaces with an understanding of these nuances. Depending on the economic/social/demographic makeup of the local population, libraries will meet the needs of their local populations. Often that means trailblazing alternative programs and fostering a space that may not necessarily match our traditional notions of library space.

Furthermore, in a rapidly changing world, it is critical to consider the functions that libraries serve because these functions are a reflection of community needs and gaps in the social infrastructure. During the Covid-19 pandemic, many UK public library staff were deployed to deliver Covid-19 response services like servicing crisis helplines and participating in social care outreach (Corble & Melik, 2021). Interviews with Scotland’s public library service managers not only echoed this development seen in the UK but also demonstrated the close connection between the communities and library staff and services (Reid, 2023). Librarians in Vermont have also been voicing concerns around the pressures of increased expectations to “act as social workers in addition to fulfilling their daily library services” (Lefrak & Meyer, 2023). Gaps in social infrastructure are revealed in consideration of particularly socially vulnerable populations. A no-sleeping policy that was instituted in the Edmonton Public Library in Edmonton, Canada,

in 2015 raised concerns about the lack of day shelters and safe places to rest or spend time in for the unhoused population (Richter, 2019). Participants of a community analysis survey revealed the key roles of libraries in supporting immigrant and refugee communities by helping them learn their new language and facilitate their education in their new place of residence (Hoyer, 2011). These are just a couple of examples of how the public space of libraries is not just a physical space but a symbolic marker of the social infrastructure.

The study has some limitations that motivate further research. The creation of arbitrary spatial units using Thiessen polygons as a limitation was primarily touched upon in the Methods chapter. Studying unbounded phenomena poses many challenges to geospatial validity and Thiessen polygons are not necessarily the most ideal method for delineating service areas. Another limitation pertains to the data collected from the library survey. Because the survey was conducted manually there is room for human error. Additionally, the information available to me restricted my data collection to a binary variable: whether or not a library provided a service. It is generally unclear with what frequency the library profiles are updated and maintained.

However, I have several recommendations that could prove valuable towards future research on this topic. I would highly recommend collecting additional data about the library services since the data in this study is primarily exploratory. A survey of the calendar of events would provide a clearer idea of the specific kinds of programs that are being hosted and with what frequency. I would also consider the economics of the libraries, which would entail collecting data about library funding and budgets. I would also consider conducting a network analysis or a gravity model to assess the gravitational pull of the various libraries and their interactions with each other. Although the Chicago Public Library system is expansive with a

total of 81 branch libraries, that is still a relatively small sample size to use when conducting statistical analyses.

In order to have more confidence in the results of the statistical tests, it would be beneficial to consider more libraries in the analysis. This could look broadening the scale of the investigation to the larger combined statistical area of metropolitan Chicago (Chicago–Naperville, IL–IN–WI) or doing a survey with a handful of other cities like Toronto or Miami.

Overall, this study has several implications. This study has the potential to shed light on which libraries may need more funding to continue to provide programs for community needs that are not being met anywhere else. Although this study is fundamentally an exploratory one with the aim to understand spatial variation of library services, this research may help inform policy that can help improve the quality and access to library services and programs. At the least, I hope that this research here provides insight into the specific ways that library services are distributed across space in Chicago and encourages a more relevant understanding of library services.

Other than providing insight into the specific ways that library services are distributed across space in Chicago, this study encourages a different understanding of libraries and library research. I make the argument that in our modern world libraries are an incredibly relevant and salient example of public space. Through this study I hope to not only encourage further research on this topic but also encourage a more holistic approach to researching library services.

Conclusion

In order to understand the ways in which public spaces function in our urban landscapes we must consider one of the most pervasive public spaces: the library. In this study, I explored the ways in which library service areas vary across space in Chicago in relation to the varying publics that they serve. Public libraries were undeniably the focus of this study but their role in this research is to stand as a specimen of its wider species: public spaces. The services provided by a library influence the way that a library is used. By exploring the various services we can have a glimpse into the internal public space of the library, especially considering the dynamic functions of libraries and their responsibilities to reflect the communities that they serve.

I found that in Chicago, disparities in library services are apparent along socio-economic and demographic lines. By employing American Community Survey data, I was able to highlight notable differences in the racial, demographic, class and social characteristics across the library service areas. Mapping these revealed pronounced clusters and patterns of social groups. For instance, white, affluent and college educated populations were predominantly located in neighborhoods on the Northside with a high concentration of these populations on the Northeast Side. This and other findings indicate the permeation of long-standing urban segregation.

By considering these results in tandem with the data from the library web survey, I found differences in the publics that libraries are serving depending on whether I was considering traditional vs non-traditional metrics. For example, metrics like circulation and visitation showed pronounced concentrations on the North Side or generally where there are higher concentrations of the white and affluent population. On the other hand, a visual analysis of non-traditional library services showed not only varying levels of their provision across the city but different relationships with the demographic variables. One of the things that I did in my analysis was

outline gaps in the presence of certain programs. One example was the Citizenship Corner program that offered assistance and materials to aid in the naturalization process for foreign born populations. Several LSAs with large foreign-born populations, predominantly along the Northwest and Far West side did not have Citizenship Corners. Resources may need to be allocated towards those libraries to assist in serving a greater and growing population of foreign-born individuals.

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