**Neighborhood demographics and proximity to a library:**

**A look into the distribution of libraries in Minneapolis**

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Public libraries provide a lot of benefits to people living in the US. Regardless of income or social status, anyone can walk into a library and use valuable resources at their local library. I spent a lot of time in the library as a child, they had AC and my house was a 5 minute walk away. Because of its convenient location I could frequently attend events and use their materials without distance being a deterrent. Beyond loaning books, libraries frequently loan out nonliterary materials such as music, movies, board games, and occasionally tools or kitchen appliances. Libraries are also great meeting places due to free entry and their nature of being a public space. For this reason, they are centers for interacting with individuals outside of your inner social sphere. Due to these benefits, libraries are centers for equalizing the educational and social gaps across groups with different racial and income backgrounds. In order to maintain equitable cities, residents should have equal access to libraries and the benefits they provide.

**Libraries as a source of social capital**

When studying the effect of libraries, researchers typically look at its contribution to social capital. There are several types of social capital. According to Johnson (2010) community level social capital is the willingness for a community to work together for the common good. Individual level social capital is the resources that someone gains access to due to social relations. Audunson, Essmat, Aabø (2011) view social capital as the interconnectedness of a community. They define two types of social capital. Bonding social capital which describes "bonds in closely knit groups such as in families, groups of friends, or religious congregations" and bridging social capital which "describes trust across these primary belongings." Regardless of the exact definition, social capital is generally understood to be social connections that enhance communal and individual resources. These connections make individual’s lives easier since they can lean on their social network for help.

Audunson, Essmat, Aabø (2011) studied the importance of public libraries as meeting places for immigrant women in Norway. In their study they noted "Migration… implies dramatic reduction in social capital" but libraries became a way to rebuild social capital in a new city. "The respondents reported uses that were instrumental and linked to the system world of work, education, bureaucracy, and formal information, as well as uses linked to the life world of meaning, culture, and individuality." Having such a central place in these women’s lives, libraries have helped them adjust to living in a new country. Specifically in Minneapolis, there is a large immigrant Somali population. It is possible that these immigrants could benefit in similar ways so it would be good to ensure they have access to similar resources and meeting spaces.

Since they are locations for public meetings, libraries are spaces that foster civic engagement. Low income people are more likely to use libraries as a meeting place, similar to a public square. Aabø, Audunson, Vårheim (2010) interpreted this to mean that access to a public library increases low income people’s ability to be active citizens. This is because being an active citizen is frequently associated with communication and interaction with other citizens.   
Libraries are also spaces that people of diverse social, racial, and economic backgrounds will frequent (Sin 2011). This may foster opportunities for cross-class collaboration and interaction since there aren’t too many places that serve such diverse demographics due to cost being a barrier to entry. It is possible that exposure to people outside of your demographic can promote understanding of issues that other groups face. Hopefully, this awareness of other groups (specifically high income people knowing low income people) can promote less stigma around being poor, and motivate more equitable policy. Whether interactions at a library are coincidental (running into a friend) or planned (meeting to work on a project), libraries provide a unique space for social interaction.

The social capital created by libraries has the potential to lead to increased future earnings in a community. Whether libraries lead to increased educational attainment from the resources they offer or community support from social interactions initiated at a library, these benefits are hard to measure. When receiving public funding, projects are required to prove their worth. Since benefits of a library aren’t always easy to quantify, it is important that policy makers understand the positive externalities created by libraries. It is particularly important for low-income people that these resources are available. Because they are often endowed with less opportunities (fiscally and socially) at birth, libraries may supplement educational or social opportunities that they were not fortunate to have been born into. This can aid students in educational attainment or give them the social connections to obtain an internship or first job.

When looking at race, Japzon & Gong (2005) found that there are trends within race and library usage. White people and Asians were more likely to use libraries than African Americans and Hispanics. Japzon & Gong were concerned that this trend causes cyclical underfunding. Typically, libraries receive funding based on usage; however, if they are predisposed to having less patrons by being located in a neighborhood with more Hispanics and African Americans, they are less likely to be fully funded. Following these decreased funds, the services offered are worse and people are less likely to use services in the future causing additional decreased funding. This chronic underfunding could worsen preexisting issues in a neighborhood such as intergenerational poverty where people do not have the economic opportunity to move out of their neighborhood.

**Importance of library accessibility**

Since libraries hold an important role in a community for accessing information and fostering social interaction, multiple studies have been done to analyze library accessibility based on location. “Travel time and transport costs from library users' residence to be the main predictive variables for the frequency of their library's usage" Obokooh & Arokoyu (1991). There are several ways that distance has been measured in the literature. The simplest measure is a straight line approach. Donnelly (2015) measured the distance from the centroid of US decennial census tracks to the nearest library. Centroids are the center points of polygons. In this case the centroid is the middle most point of a census tract. Another approach is network analysis to measure the distance a patron would need to travel in order to visit their nearest library (Park, 2012). Both studies found that distance is a critical factor to library access; with Donnelly finding that people in urban areas have better access to libraries than people who live in rural areas.

Neighborhood characteristics is another topic for library accessibility. Koontz (1992) noticed that "the location of libraries has a long term effect on library use." Depending on placement, they can have higher usage. Japzon & Gong (2005) studied correlations between neighborhood characteristics and library usage. Race was one correlation, with Whites and Asians frequenting the library more often than Blacks or Hispanics. Education was the highest predictor of library usage. The authors speculated that this is due to educated people being comfortable in and knowing how to use a library. Income was another neighborhood characteristic that effected libraries. Sin (2011) found that there was a positive relationship between income and library services offered. In most US states, local government is the main source of library funding. So, a lower income neighborhood is less likely to have enough funding to offer the same resources as a higher income neighborhood.

Since we know the potential benefits that a library can offer a community, funding public libraries is an example of efficient redistribution. Efficient redistribution is the “direct intervention in the production process to achieve Pareto-efficient improvements in the allocation and equitable distribution of resources” (Piketty 2015). In this scenario, libraries are a solution to economic inequality due to their ability to offer additional services to low income individuals. Libraries in Minneapolis have been part of the Hennepin County Library since 2008 (City of Minneapolis, 2021). The county library system is funded primarily through county bonds and 2% of the budget comes from property tax (Hennepin County, 2018). This system redistributes the property taxes and county taxes across all libraries. This means that lower income areas will receive the same amount as a high-income area, reducing the inequality in access to funding.

Library services have the potential to be more beneficial for low income people since there is not a barrier to entry, assuming distance is not a factor. Higher income people may not need to use a library since they can easily afford a substitute for library services. For example, meeting at a coffee shop for a meeting, owning a streaming service rather than renting movies, buying books rather than renting them, or having Wi-Fi or a computer at home. Additionally, there is little stigma associated with using library services. High income people are typically more educated which increases their likelihood of using a library, so patronizing a library is not seen as unfairly taking advantage of the government. When looking at a library as a method of education, it is possible that library programs for children can motivate young people to excel in school. This would encourage low-income people to become educated and benefit from the college wage premium.

**Methodology**

As a case study of library accessibility, I decided to study the distribution of public libraries in Minneapolis in comparison with racial demographics throughout the city. Population data was taken from the 2020 US census at the block level – the smallest division publicly available with 5964 blocks in the city of Minneapolis. People were categorized as either white or not white where multi racial individuals were part of the non-white group. All data cleaning and linear regression was done in R. The population data was plotted and analyzed with the library locations in ArcGIS using central place theory. Central place theory is the assumption that a customer will patronize the closest central place. This analysis used a straight-line approach which does not account for landmark barriers (rivers, lakes, highways, etc). A more nuanced approach would calculate the travel distance by road. Since this study is about inequality, access via public transit or walking could also be considered in future analysis.

**Results**

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| Map  Description automatically generated | Map 2  Distance from a library |
| *Map 1* | *Map 2* |

Map 1 shows the distribution of race in the city of Minneapolis with the blue dots signifying library location. Map 2 shows the distance from a census tract to the nearest library. The smallest bucket was half a mile since that is within walking distance. From a quick look at the maps there doesn’t appear to be any correlation between % people of color (POC) and library accessibility. There are a few spots where majority white neighborhoods are farthest from a library. Map 2 identifies the neighborhoods with farthest accessibility with the dark red color. These dark red regions are primarily seen in neighborhoods with 80% or more white people and they are generally higher income neighborhoods as well. Due their economic standing, residents in these neighborhoods are more likely to own a car so although their distance from a library may be farther, a car provides equal access to libraries.

Chart, scatter chart

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Graph 1 is the output of a simple linear regression model. It shows a negative relationship between percent not white and distance from a library. This result is not surprising since the literature shows the importance of libraries in minority communities, so municipalities are more likely to take race into consideration when determining the location of public buildings. Additionally, urban areas tend to be more progressive so there may be an emphasis on providing resources to underserved communities.

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| **Table 1**  **Summary statistics by census block** | | | | | | |
|  | Minimum | 1st quartile | Median | Mean | 3rd quartile | Maximum |
| % Not White | 0% | 6.4% | 20% | 29.5% | 47.1% | 100% |
| Distance (miles) | 0 | .45 | .7 | .72 | .97 | 1.99 |

As seen in table 1, it is important to note the demographic makeup of Minneapolis. When looking at % Not White, less than a quarter of all census blocks in the city have more than 50% people of color (POC). This isn’t surprising when we look at the totals for each race in the entire city in table 2. With about 60% of the city being white, we can’t expect there to be equal percentages of white and POC in each census block. However, the summary statistics do show that there isn’t an equal distribution of people of color across census blocks. If there were an equal distribution, it would be expected that the mean % Not White would be around 40%, the city’s total percent not white. This is because the majority of POC tend to live in the same communities and in denser housing in Minneapolis.

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| **Table 2**  **Race totals for the entire city** | | |
|  | Total | % of Total |
| White | 259983 | 60% |
| Black | 82809 | 19% |
| 2 or More Races | 34819 | 8% |
| Asian | 25351 | 6% |
| Other | 25325 | 6% |
| Native American | 7473 | 2% |
| Pacific Islander | 202 | 0% |
| **Total** | **435962** | **100%** |

In further studies I would like to see if the resources available at each branch varies by neighborhood demographics. This study shows that geographically, people of color have easier access to libraries, but it does not show the quality of each branch. Quality could be measured by types of services offered and hours of operation. I hypothesize that differences between branches could be influenced by their neighborhood’s ability to demand more/better services.

**Conclusion**

This analysis showed a positive correlation between the percent of not white people in a census block and its proximity to a library in the city of Minneapolis. This is important because of the positive impact that libraries have on minority and immigrant neighborhoods. These benefits include: access to information (through books, media, and the internet), opportunities for civic engagement, and providing a public meeting space. Funding libraries is a form of efficient redistribution to offer additional services to citizens – services that may be more beneficial for low-income people. Of course, none of these benefits are helpful unless people have access to them. For this reason, libraries need easy accessibility, which generally implies proximity to a person’s house.

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