



DISPARITIES IN ACCESS IN LONDON'S TOWER HAMLETS

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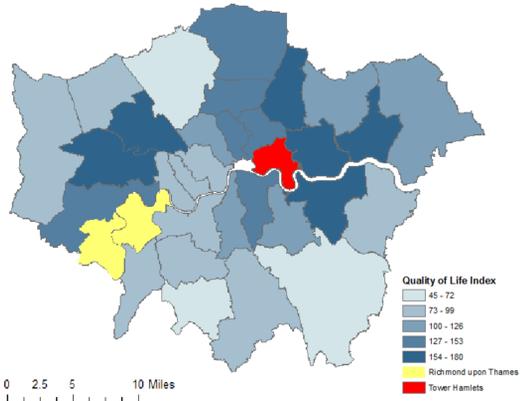
BACKGROUND

London is a remarkably diverse city: 36.6% of the population was born outside of the United Kingdom, 44.3% of children have a first language other than English, and 41.8% identify as Black, Asian, and Minority Ethnic (BAME), the British term used to denote people of color. This diversity also extends to quality of life – across the city, there are huge socioeconomic and health disparities.

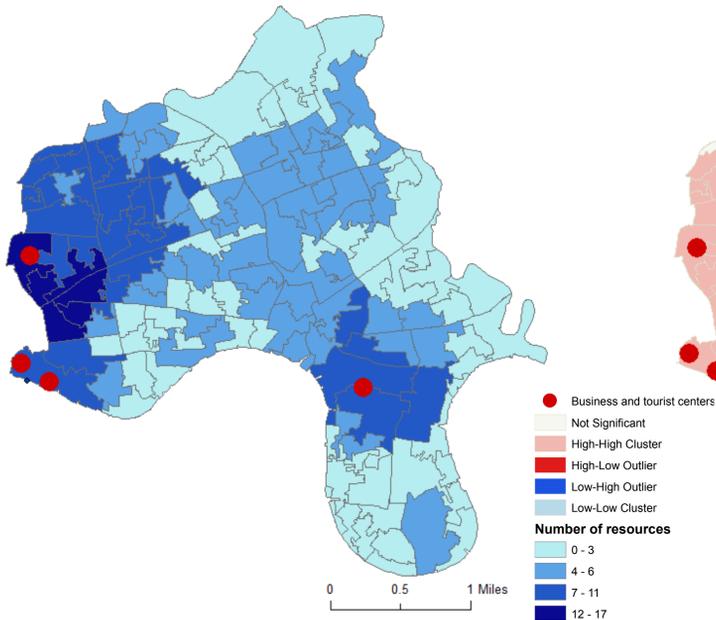
On a city level, it is clear that there is a huge effort in London to make resources accessible to all. Transport for London (TfL), the governmental organization responsible for all public transport in London (including Underground and Overground trains, buses, and, as of January 2016, the entire suburban rail network), is constantly expanding in order to allow for greater access to Greater London for those living outside of the city and in the suburbs. Within inner London boroughs, however, where housing prices are skyrocketing, there are large pockets of neighborhoods where access to transportation resources are still low. In order to address these issues of inequality within a large metropolitan city, it is essential to identify the ways in which demographics relate to access.

Tower Hamlets is a borough in inner London with a wide spectrum of resources and needs. The borough encompasses much of the East End, a traditionally poor area with a large immigrant community, Canary Wharf, home to most of London's tallest buildings and business headquarters, and the Tower of London, a major tourist destination. Tower Hamlets borders the City of London, the economic heart of Greater London. Richmond-upon-Thames, on the other hand, is a borough in Outer London with a largely homogenous population. The borough is home to many of London's largest parks and is, in many ways, a suburb of London.

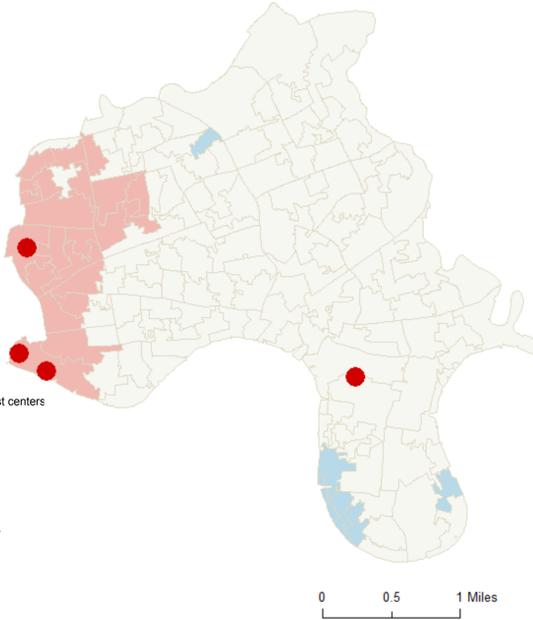
This project seeks to explore the spatial relationship between demographics, quality of life, and access to vital resources by first comparing access indicators in the London borough with the lowest quality of life, Tower Hamlets, with the borough with the highest quality of life, Richmond-upon-Thames. Within Tower Hamlets, further analysis is done to determine whether there is clustering of resources away from poor residential areas. Rather than attempting to explore all possible resources in order to understand access, I focused on grocery stores and public transportation, two important resources that can serve as proxy indicators for access in London.



QUALITY OF LIFE IN LONDON'S BOROUGHS



DENSITY AND CLUSTERING OF GROCERY STORES AND TRAIN STATIONS IN TOWER HAMLETS



RESULTS

Of the 263,003 residents of Tower Hamlets, 185,676 or 70.6% of residents live within the 500 meter train station buffer, while in Richmond, only 29.1% of the 185,987 population live within the transport buffer. However, when access to a car is factored in, it is likely that Richmond has higher access to transportation.

In Tower Hamlets, only 139,602 or 53.1% of residents live within an easy walk of a grocery store. In Richmond-upon-Thames, where the majority of residents have cars, 180,136 or 96.9% of residents live within an easy drive of a grocery store, with only 5,851 residents living outside of the easy driving buffer.

My final analysis of resource distribution in Tower Hamlets revealed that the areas with the largest number of train stations and grocery stores were overwhelmingly the LSOAs surrounding the most popular tourist and business destinations in the borough. Around Christ Church, Spitalfields and the Tower of London and St. Katharine Docks are dozens of stations and groceries, and on the Isle of Dogs, the only LSOAs with significant numbers of resources fall in the area directly surrounding One Canada Square and the other business centers on Canary Wharf. My cluster and outlier analysis found a significant cluster of grocery stores and train stations in the west side of the borough, spanning from the Tower of London up to Spitalfields.

CONCLUSIONS

Tower Hamlets, a relatively low-income community with a large immigrant population and low quality of life, has less access to resources than the more suburban Richmond-upon-Thames, despite its prime location in the center of London. This indicates a real emphasis within the city on supplying resources to wealthier communities rather than more densely populated, poorer neighborhoods. Even within Tower Hamlets, grocery stores and train stations appear to be placed where tourist and white collar workers, commuting into the city for the day, can quickly grab a few items at the grocery store and then get on the train to leave the city – rather than within Tower Hamlet's residential communities.

Transport for London is working hard to ensure access to London resources for those living many miles out of the city, but this project shows that there is still work to be done within the heart of the city. As London continues to grow and develop, addressing issues of access – particularly in communities with lower socioeconomic status and quality of life – must be a priority. Local planning policies that encourage the expansion of grocery stores into residential neighborhoods will be beneficial in Tower Hamlets.

This project's results are preliminary and should be explored in further detail. Conclusive results are limited by a lack of access to land use data, but the analysis does provide the framework for future research and a greater understanding of where resources are distributed within Greater London.



A view of Tower Hamlet's Isle of Dogs from the south. In the center is One Canada Square, with other Canary Wharf buildings surrounding it.

METHODS

This poster presents three separate questions in order to develop an understanding of the spatial relationship between demographics and access to resources. The first question provides a framework for the focus of the project, the second provides a comparison of two distinct areas, and the third looks closely at one underserved area.

1. Which boroughs rank highest and lowest on a quality of life index?

To answer this question, I first created an index of indicators. These included health indicators (childhood obesity rate, healthy life expectancy, access to green space), education indicators (school readiness at age 5), and economic indicators (gross annual pay, number of residents earning less than London Living Wage). Each borough was given a ranking between 1 and 32, providing a final index with a potential range of 7 to 224, with 7 representing the best quality of life and 224 representing the lowest. The actual range was 45 to 180, with Richmond-upon-Thames scoring the highest in quality of life indicators and Tower Hamlets scoring the lowest.

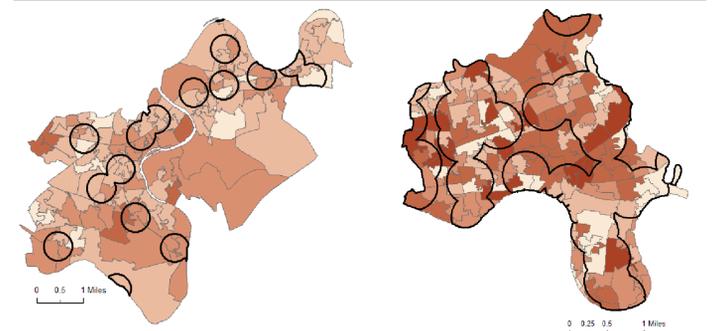
2. Is there a difference in access to transportation or grocery stores between Tower Hamlets and Richmond-upon-Thames?

To determine whether residents of Richmond-upon-Thames, with its overall higher quality of life, have better access to London transport or to grocery stores than residents of Tower Hamlets, I first joined data on demographics to maps of each of the boroughs at the Lower Layer Super Output Area (LSOA) level, breaking the boroughs up into blocks of 1,000 to 3,000 people. I then imported the coordinates of all Transport for London stations and created a 500 meter buffer around them. The literature indicates that a walkable distance to public transport is 400 meters, but I added an additional 100 meters, as city residents are often more willing to walk longer distances to transportation. In order to create the buffer for access to grocery stores, I factored in access to cars in both boroughs. In Tower Hamlets, only 36.8% of households have access to a car, while in Richmond-upon-Thames, 75.8% of households have at least one car. Given this discrepancy, I made the assumption that the majority of Richmond residents would be driving to the grocery store, while the majority of Tower Hamlets residents would be walking. Given this assumption, I set the Richmond grocery store buffer to 2000 meters, keeping Tower Hamlets at 500 meters. I finally performed an intersect with the buffers and the boroughs and determined the population within the buffers.

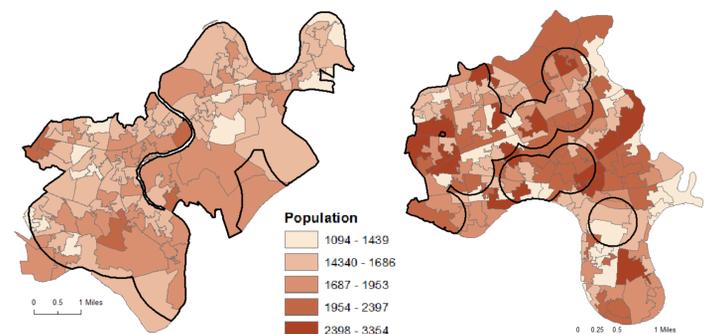
3. Are grocery stores and Transport for London stations located closer to tourist areas and business districts than to residential areas?

In order to explore where the two resources were distributed, I compiled all of the data for both resources (grocery stores and train stations) and performed a spatial join to determine which LSOAs have the most resources. I then imported the coordinates of the main tourist attractions and business centers in the borough: the Tower of London; Christ Church, Spitalfields, a popular tourist destination; St. Katharine Docks, a recently developed business and leisure destination; and One Canada Square, the second tallest building in London in Canary Wharf, a large business center. I then performed a cluster and outlier analysis (Local Moran's I) to determine if and where there is clustering.

ACCESS IN TOWER HAMLETS AS COMPARED TO OUTER BOROUGH RICHMOND-UPON-THAMES



TRAIN STATIONS WITH 500M WALKING BUFFER



GROCERIES WITH 2000M DRIVING AND 500M WALKING BUFFER



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