Public libraries accessibility impact on socio-economic indicators

Research process:

(1) The preparation before analysis

Literature Review: To understand the current research on public library accessibility and its socio-economic impacts, identify gaps, and refine the research questions. In this case, techniques such as systematic literature review and meta-analysis, as well as tools such as academic databases (Google Scholar, JSTOR, etc.) and reference management software (Zotero, Mendeley), are used.

(2) Data collection and preparation

To create a cohesive and comprehensive dataset that combines library locations, demographic data, and socio-economic indicators. Use the dataset sources such as London Datastore, UK Census, OpenStreetMap, and possibly others for demographic, socio-economic, and library location data. Meanwhile, data cleaning, data transformation, and integration of datasets from different sources are also needed.

(3) Accessibility Analysis

To assess public library accessibility levels across London, considering factors like distance, travel time, and transport options.

In this part, Methodologies should be used in the part teaching in Urban Simulation, such as Spatial analysis and Network analysis. The tools that should be used are the R5Py library for transport and accessibility analysis and GIS software for spatial data manipulation.

(4) Analysis of other aspects (Socio-economic Impact Analysis)

To examine the relationship between library accessibility and socio-economic aspects. These aspects may encompass **educational attainment, employment opportunities, health outcomes, digital literacy, voter' turnout, and community engagement**. In this part, advanced techniques such as Statistical analysis, regression analysis, and possibly machine learning for predictive modeling should be used.

(5) Geospatial Analysis

To visualize and analyze spatial patterns of library accessibility and their association with socio-economic factors, we will apply techniques such as spatial statistical analysis.

These analyses will be implemented through GIS software and Python programming, and the combination of these tools and techniques will contribute to an in-depth understanding of the characteristics of the spatial distribution of public library accessibility and its potential linkages with the socio-economic conditions of the community.

(6) Interpretation and Policy Implications

Techniques such as qualitative analysis, SWOT analysis, and policy analysis frameworks will be employed to interpret the research findings in the current policy context, propose evidence-based policy interventions, and discuss possible impacts on different populations. This approach will enable us to understand the complexity of public library accessibility issues and provide practical recommendations for improving services and enhancing the well-being of various social groups.

(7) Dissemination

Techniques such as academic writing, visual narrative, and data visualization will be employed to communicate the findings to a broader audience, including academics, policymakers, and community stakeholders. By combining these tools and techniques, we aim to share research findings clearly and effectively and promote understanding and dialogue between stakeholders in different fields.

Tools and Techniques:

Spatial Data Science: Understanding of spatial data, GIS, and spatial analysis techniques.

Urban Simulation: Knowledge of urban systems, simulation models, and urban dynamics.

Python Proficiency: Advanced coding skills in Python, familiarity with relevant libraries for data manipulation, analysis, and visualization.

Statistical Analysis: Strong foundation in statistical methods and the ability to apply them to analyze socio-economic data.