Research Question:

How efficient are public transportation systems in Vietnam's metropolitan cities, and do low-income or high-density districts have equitable access?.

Motivation:

Rapid urbanization in Vietnam's major cities has increased demand for public transportation, and with several metro lines recently put into operation in Ho Chi Minh City and Hanoi, it is essential to evaluate whether these systems truly meet the needs of residents. Understanding transit efficiency is important not only for reducing congestion and travel times but also for ensuring that urban mobility is accessible and equitable across districts. By analyzing how well buses and metro services serve different communities, this project can provide valuable insights for policymakers and urban planners to improve service coverage, frequency, and fairness in Vietnam's evolving urban transport network..

Proposed Data Sources:

I will collect open data on bus and metro routes, stops, and schedules from city transportation authorities such as HCMC Metro and the Hanoi Transport Department. District-level population and socioeconomic data from the General Statistics Office will provide context on demand and identify potentially underserved areas. I may also incorporate travel time and traffic data from publicly available sources like Google Maps. Where detailed data is missing or incomplete, I will supplement the analysis with approximations, secondary reports, or case studies to ensure meaningful insights.

Methodology

The project will use a combination of geospatial and statistical methods. First, I will map public transport routes and stops relative to population density and income levels to identify areas that may be underserved. Efficiency metrics such as service frequency, travel times, and route coverage will be calculated to evaluate operational performance. Comparative analyses will highlight disparities between districts, and visualizations such as maps and charts will help communicate the findings. This methodology will allow me to assess both the efficiency and the equity of public transportation systems.

Challenges

I recognize that collecting comprehensive and reliable data may be difficult due to limitations in reporting systems, which is a common issue in developing countries. Real-time usage statistics, exact ridership numbers, or precise travel times may not be publicly accessible, and some datasets may be incomplete or outdated. Despite these challenges, I plan to make the most of available open data, supplementing gaps with approximations, secondary reports, or case studies. This approach will enable a rigorous analysis of public transportation efficiency and fairness, even in the context of limited data availability.