**Topic: Real Estate Pricing in Hanoi**

**Purpose:** The purpose of this research is to identify the district characteristics that affect the price of real estate in 12 central districts of Hanoi, Vietnam. Furthermore, we also want to see how the cost of real estate changes across different neighborhoods and whether the impacts of each variable in each district are distinct.

**Data:** Our data was collected from Hanoi’s real estate website by web scraping between July and October in 2022 and the corresponding period in 2023. Although Hanoi was divided into 30 districts in total, we decided to focus on 12 central districts due to the large number of outliers in the suburban areas. The data set contains 22,948 observations including 12 independent variables: Road width (m), Area (m2), Lake, Tourist attractions, Universities, District Area (km2), District Population (Thousands), District Density (people/km2), Latitude, Longitude, Distance from center (km), Distance from nearest road (km); and one dependent variable: Price (Millions VND/m2).

**Method:** Our data set was cleaned and three dummy variables (Lake, Tourist attractions, and Universities) were added. Descriptive analysis, Linear Regression analysis, and Correlation matrix were conducted utilizing Stata and IBM SPSS Statistics to explore the relationship between independent variables and real estate price. ArcGIS was applied to conduct two data visualizations that display the average price per m2 and population density (people/km2).

**Results:** On average, the real estate price in central Hanoi is approximately 133.4 million VND/m2 across all 12 districts. Hoan Kiem (5), and Hai Ba Trung (4) are the two most central districts with the highest real estate price, reaching up to 560 million VND/m2 while Ha Dong (7) experiences the lowest price range at only around 94 million VND/m2 (1 USD = 25,000 VND). Road width, distance from the city center, and distance from main roads are the key factors that affect the cost of housing since they are statistically significant in most of the districts. The road width has a positive relationship with price, which means that wider roads are associated with higher real estate prices, while there is an inverse relationship between price and distance from the city center except for Hoan Kiem (5) and Hoang Mai (6) districts because of their locations. Besides, the distance from a location to the nearest road shows both positive and negative signs across 12 districts, which might be due to other factors such as road type or traffic volume. In the correlation matrix table, district area, and district population negatively correlate with the real estate price while it is the other way around for road width and district density. Though it may sound contradictory; it makes sense because district density is not only about the total number of people living in the district, but it also shows how concentrated the population is within the district. High density can suggest efficient land use, proximity to amenities, and urban development, which might be more appealing to real estate buyers. This indicates that the cost of housing increases when district density goes up. Surprisingly, three dummy variables (Lake, Tourist attractions, and Universities) do not have an impact on the real estate price in Hanoi.

**Discussion:** In short, the price of real estate can vary rapidly depending on numerous factors. Locations with wider roads, high district density, and proximity to the city center and main roads will have higher real estate prices. Within the observed period, the price goes up by 1.1% to 12.8%, indicating a surge in demand. Other factors such as district area, district population, or latitude and longitude have little impact on the cost of housing.