



Real Estate Pricing in Hanoi

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INBM 314: Applied Empirical Data Analysis

INTRODUCTION

The research focuses on analyzing the factors influencing real estate prices in Hanoi, Vietnam, a crucial aspect of the city's economic landscape due to its status as the capital and a developed area in the country. Understanding these dynamics can aid stakeholders in making informed decisions about investment, development, and urban planning in Hanoi.

OBJECTIVES

- To examine the factors that affect Hanoi real estate prices.
- To discover whether the cost of housing differs in various key regions and whether the impacts of each variable of various sizes are distinct.

DATA AND METHODOLOGY

- The dataset was obtained through web scraping from a Hanoi's real estate website. It comprises 22,948 observations, capturing two snapshots of real estate activity in Hanoi: one from July to October 2022 and another from the corresponding period in 2023.
- Until now, Hanoi is divided into 12 central districts and 18 suburban districts. Due to the large number of outliers in the suburban areas, this research will only focus on 12 central districts.
- 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).
- IBM SPSS Statistics, Stata, and Microsoft Excel were utilized during the research to conduct descriptive analysis, regression analysis, and correlation matrix.

Table 1: Descriptive Analysis

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Road width	22821	0	325	7.52	8.58
Area	22947	18	999	110.776	115.44
Price	22947	1.63	19154.15	133.388	169.60
District Area	22947	5.29	59.93	37.4703	19.18
District Population	22947	152.8	401.7	270.625	59.00
District Density	22947	4510.26	40331.33	11543.6	10445.04
Latitude	22947	20.57	21.14	21.024	0.04
Longitude	22947	105.51	105.93	105.827	0.06
Distance from center	22947	0.14	51.23	6.71	3.32
Distance from nearest road	22947	0.01	33.27	2.78	1.66
Valid N	22821				

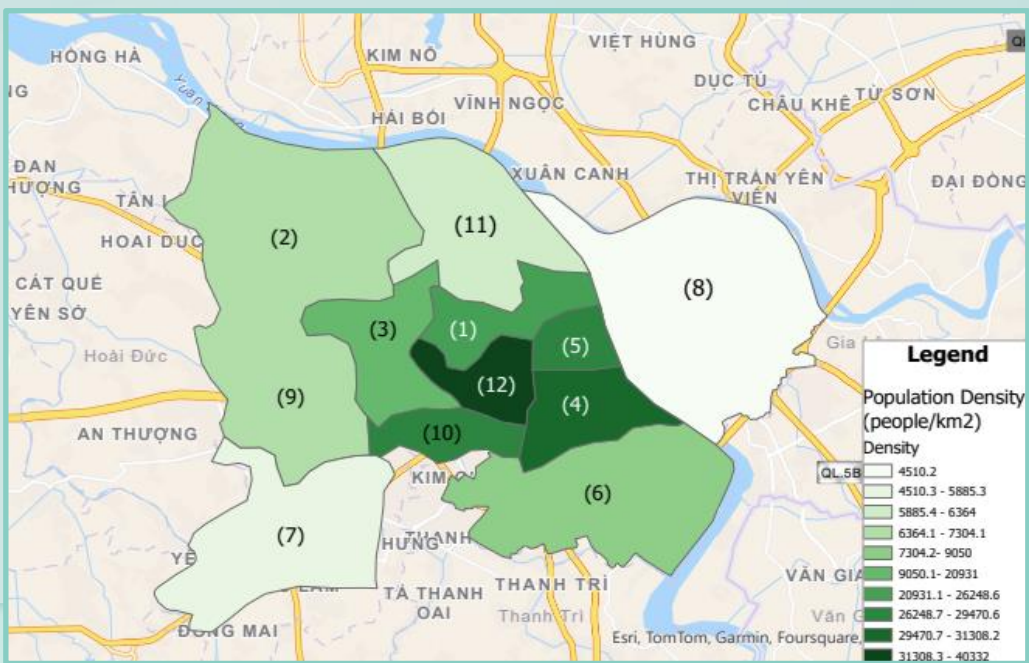
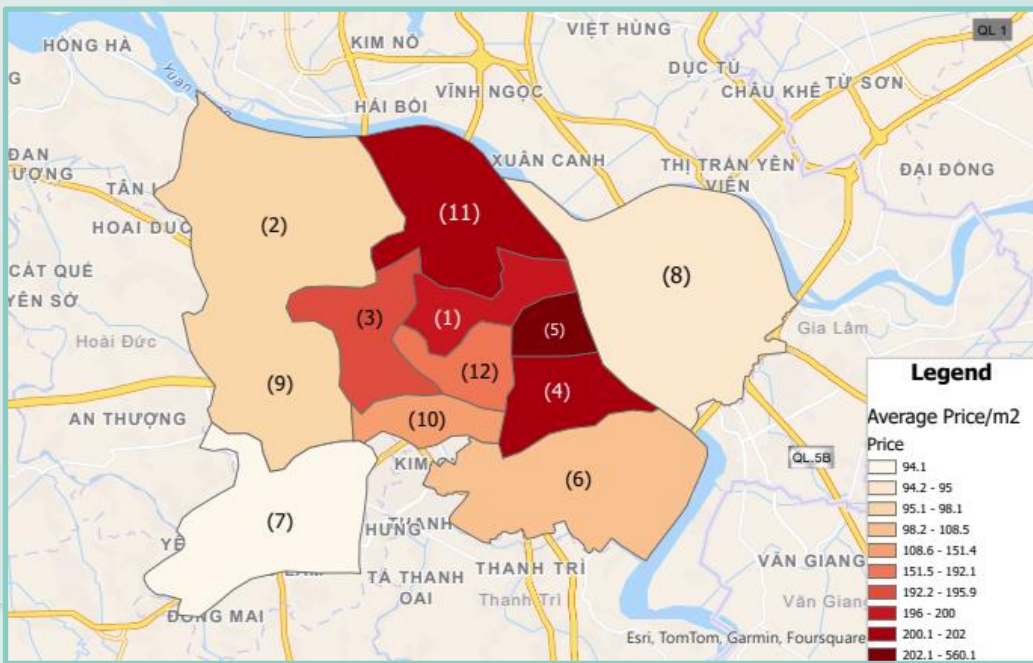
Table 2: Regression Analysis on real estate price of 12 central districts in Hanoi

Variables	Ba Dinh (1)	Bac Tu Liem (2)	Cau Giay (3)	Hai Ba Trung (4)	Hoan Kiem (5)	Hoang Mai (6)	Ha Dong (7)	Long Bien (8)	Nam Tu Liem (9)	Thanh Xuan (10)	Tay Ho (11)	Dong Da (12)	All
Constant	-498244.2*** (53950.1)	16405.9*** (5005.7)	-171.3 (29344.2)	584412.5*** (68227.8)	-649198.4 (580712.4)	13509.3 (21092.4)	23258.2*** (4817.9)	6456.2 (4589)	-15300.4 (46114.5)	65161.6*** (20642.6)	-15705 (42274.2)	41156.2 (54330.8)	-1798.5 (3605.8)
Road width	5.6*** (.4)	3.1*** (.1)	3.6*** (.2)	4.3*** (.3)	6.3*** (2.4)	5.2*** (.5)	3.0*** (.1)	3.5*** (.1)	8.6*** (1.4)	4.1*** (.3)	5.4*** (.2)	4.4*** (.3)	4.3*** (.1)
Distance from center	-16.7*** (3.9)	-6.8*** (.6)	5.1** (2.3)	-63.7*** (4.2)	-36.9 (29.2)	-2.6 (3.6)	-6.2*** (.8)	-7.3*** (.8)	-8.1 (5.9)	-4.5** (2)	-22.4*** (1.6)	-4.3 (4.1)	-6.6*** (.6)
Distance from nearest road	52.3*** (10.7)	-3.2*** (1.0)	18.2*** (4.8)	-106.5*** (7.9)	6.5 (81.4)	.9 (5.3)	.4*** (.8)	3.7*** (1.3)	12.2 (7.8)	-2.9 (3.8)	-4.9 (4.4)	-4.3 (7.2)	.5 (.8)
Longitude	4713.4*** (507.5)	-119*** (42.6)	11.8 (252.6)	-5103.3*** (606.8)	5993.7 (5121.0)	-125.8 (193.3)	-179.2*** (42.2)	-9.3 (38.3)	146.2 (392.5)	-597.3*** (182.9)	305.4 (373.2)	-334.3 (508.6)	17.2 (32.3)
Latitude	-21.1 (306.6)	-175*** (33.5)	-47.7 (159.0)	-2071.9*** (330.4)	726.7 (2967.6)	-5.2 (178.6)	-199*** (39.4)	-254.6*** (43.0)	-3.5 (375.9)	-85.5 (115.0)	-775.3*** (177.0)	-266.8 (271.5)	6.2 (32.9)
Adjusted R-square	.32	.25	.18	.46	.04	.07	.23	.22	.02	.196	.298	.16	.17
F statistics	55.9	132.9	77.2	119.9	2.6	19.7	166.8	372.9	9.9	48.7	194.5	44.7	400.1

* p < .1; ** p < .05; *** p < .01; the more stars, the greater the significance

Table 3: Correlation Matrix

	Road width	Area	Price	Lake	Tourist attractions	Universities	District Area	District Population	District Density	Latitude	Longitude	Distance from center	Distance from nearest road
Road width		.32	.276	.052	.054	.006	-.1	-.037	.098	-.013	-.016	-.08	.003
Area	.32		.203	.193	.192	-.039	-.229	-.15	.143	.1	-.004	-.228	-.108
Price	.276	.203		.164	.206	.023	-.269	-.126	.212	.039	-.019	-.24	-.08
Lake	.052	.193	.164		.37	-.25	-.305	-.377	-.03	.128	.019	-.265	-.25
Tourist attractions	.054	.192	.206	.37		.076	-.705	-.349	.496	.094	-.217	-.408	-.21
Universities	.006	-.039	.023	-.25	.076		-.45	.466	.423	-.406	-.63	.084	.014
District Area	-.1	-.229	-.269	-.305	-.705	-.45		.105	-.808	.027	.381	.487	.164
District Population	-.037	-.15	-.126	-.377	-.349	.466	.105		.349	-.305	.061	.031	.052
District Density	.098	.143	.212	-.03	.496	.423	-.808	.349		-.13	-.1	-.507	-.07
Latitude	-.012	.1	.039	.128	.094	-.406	.027	-.305	-.13		.19	-.396	-.157
Longitude	-.016	-.004	-.019	.019	-.217	-.63	.381	.061	-.1	.19		-.27	.01
Distance from center	-.082	-.228	-.24	-.265	-.408	.084	.487	.031	-.507	-.396	-.27		.495
Distance from nearest road	.003	-.1	-.08	-.25	-.21	.014	.164	.052	-.07	-.157	.01	.495	



DISCUSSION

- The relationship between price and other independent variables is explored in Table 2 and Table 3. Key factors such as road width, distance from the city center, and distance from main roads play a significant role in influencing real estate prices. Wider roads and proximity to the center (Hoan Kiem Lake) and main roads are associated with higher property values. However, in Hoan Kiem and Ba Dinh districts, where the city center is located, prices remain high regardless of road width due to the districts' rich historical heritage.
- Distance from the nearest road shows positive and negative effects that vary across different districts. This mixed relationship indicates that the proximity to roads may be perceived differently depending on the district, possibly due to road type and traffic volume. Similarly, longitude and latitude also demonstrate significant variations in their effects on property prices across districts, indicating that geographical coordinates may have differing impacts on real estate values in each area.
- In the correlation matrix, road width positively correlates with price while the district area, distance from the city center, and main roads witness a negative correlation with real estate price. This highlights the importance of location and proximity to urban amenities.
- Interestingly, three dummy variables—proximity to lakes, tourist attractions, and universities—appear to have little effect on property prices, as indicated by their relatively low correlation coefficients.
- Hanoi's property prices increased by 1.1% to 12.8% from 2022 to 2023, indicating a surge in demand. This growth is driven by rapid urbanization and ongoing infrastructure projects, including transportation networks and industrial parks. These developments offer promising investment opportunities in the residential, commercial, and industrial sectors.

CONCLUSION

- Highlights how real estate prices in Hanoi are heavily influenced by location premiums relating to road connectivity, centrality, and access to main thoroughfares.
- The spatial accessibility and urban mobility patterns appear to be the key factors dictating pricing dynamics across Hanoi's real estate landscape based on this analysis.

REFERENCE

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- Toriano, G. K. T. (2024, April 11). The Rising Dragon of Real Estate: Vietnam steals the spotlight in Asia Pacific. Asia Property Awards.