HOUSING PRICE INDEX

APRIL 2024 ISSUE 30

Housing Market Prices Decelerate in Q4-2023

House price have eased amidst tough economic conditions

98.22
KBA House price Index for Q4 2023

The housing market prices, which had declined in the first three quarters of 2023 compared to 2022, eased slightly in the fourth quarter of 2023, largely driven by strengthening demand that started building up in the third quarter.

The Kenya Bankers Association-House Price Index (KBA-HPI) exhibited a consistent downward trend over most of 2023 (**Figure 1**). The prices, in the fourth quarter of 2023 contracted by 1.53 percent on a quarter-on-quarter basis easing the strong relapse recorded in the first three quarters of 2023. In general, the trend of the housing prices points to the intersection between demand and supply dynamics and overall economic development.

Despite the real estate sector showing a slow but consistent activity growth trend throughout the year, with steady quarter-on- quarter increments, a fluctuating trend was evident in the construction sector; starting with a slight increase in the first quarter (3.06%), followed by a decrease in second quarter (2.55%) and a subsequent rise in the third quarter of 2023 (3.80%).

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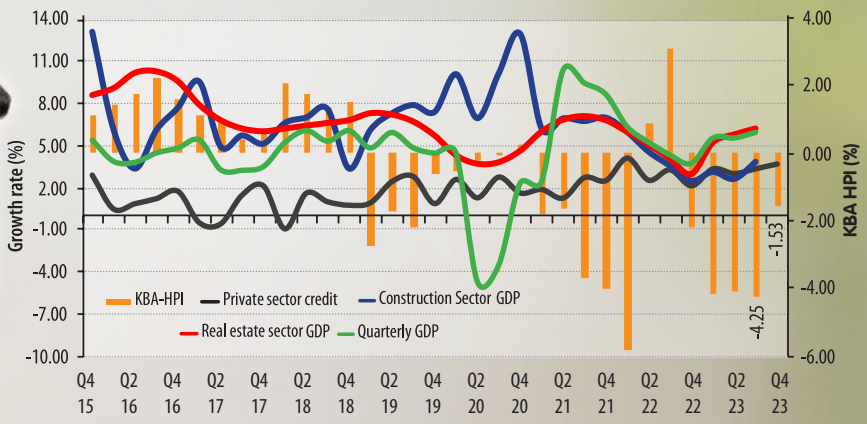
Figure 1:
Evolution of Sectoral GDP, Overall GDP and House Inflation (Q4 2015 - Q4 2023)



The Numbers at a Glance

1 House prices fluctuations

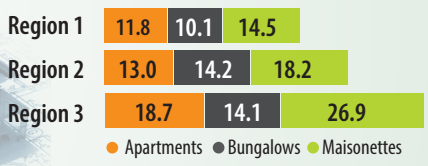
96.15	92.25	99.75	98.22
Q1_2023	Q2_2023	Q3_2023	Q4_2023

* Based on Base period Q1_2013

2 The main prices drivers were sensitive to:

- Plinth area (size)
- No. of Bedrooms
- No. of Floors
- No. of Bathrooms

3 Average Property Value across Regions (Kes Millions)



Housing Market Improves in Q4, 2023

Figure 2a: Cement production and consumption

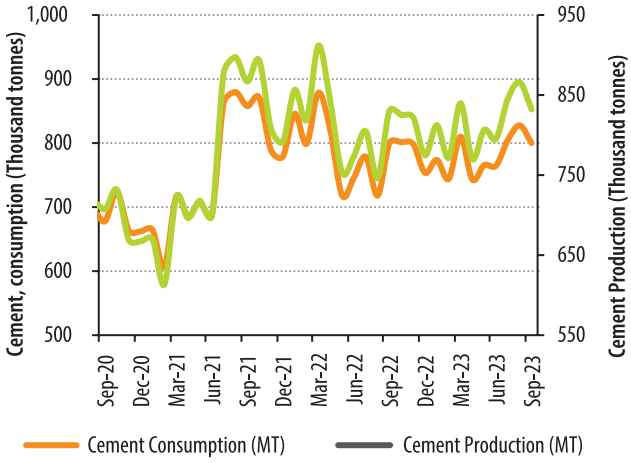
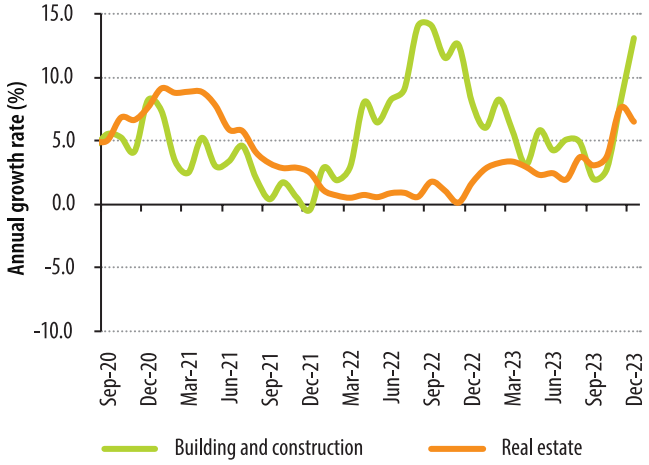


Figure 2b: Sectoral credit to the real estate, building and construction sector (y-o-y, percent)



> Credit growth in building and construction surged to 13.04% in December 2023, up from 2.74% in October 2023. Meanwhile, lending to real estate rose to 6.46% in December 2023 from 3.74% in October 2023.

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In 2023, there was a notable growth in the cement manufacturing sub-sector. This coupled with the modest expansion in real sector; which expanded by 6.20 percent in the third quarter of 2023, up from 5.77 percent in the previous quarter and 5.19 percent in the first quarter of 2023, contributed to an overall improvement in the housing market.

Based on the latest available data as of the third quarter 2023, cement production recorded a quarter-on- quarter growth of 7.24 percent to 2,541,763 metric tons (MT) in the third quarter of 2023 from 2,370,246 MT in Second quarter 2023, while consumption also grew, but at a lesser growth rate; growing by 7.24 percent to 2,430,488 MT in the third quarter of 2023 (**Figure 2a**). The increase in consumption was anchored on steady improvement in credit to building and construction and real estate sectors.

Credit growth in the building and construction sector saw a moderate increase, reaching 13.04 percent in December 2023, up from 2.74 percent in October 2023. Conversely, lending to the real estate sector experienced a relatively lower growth, though rising to 6.46 percent in December 2023 from 3.74 percent in October 2023 (**Figure 2b**).

The KBA Composite Housing Price Index (KBA-HPI); utilizing the Laspeyres Index methodology (refer to the Technical Note), indicates an 18.21 percent increase in house prices in the fourth quarter of 2023 compared to prices in a similar period in 2013 (base period=Q1 2013), and a 1.78 percent decline based on the moving base index (see **Figure 3** and **Table 1**).

Figure 3: Evolution of the KBA House Price Index

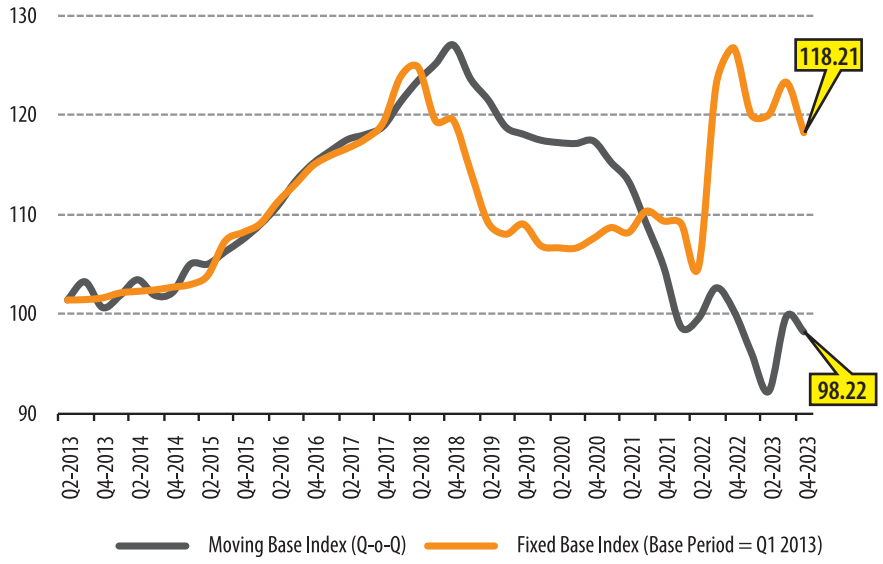


Table 1: Price Movement Series

Period	Index with a fixed base*	Index with a moving base
Q2-2020	106.66	117.20
Q3-2020	106.63	117.11
Q4-2020	107.60	117.37
Q1-2021	108.69	115.23
Q2-2021	108.19	113.32
Q3-2021	110.33	109.13
Q4-2021	109.35	104.77
Q1-2022	109.10	98.69
Q2-2022	104.78	99.58
Q3-2022	123.04	102.64
Q4-2022	126.72	100.35
Q1-2023	120.00	96.15
Q2-2023	120.01	92.25
Q3-2023	123.28	99.75
Q4-2023	118.21	98.22

* Base Period Q1_2013

Q4 sees Surge in Demand for Affordable Housing

There were notable shifts in buyers' preferences as they searched for affordable houses across regions during the quarter.

Activity in the low-market segment (**Region 1**), remained dominant, rising to account for 62.26 percent in the fourth quarter from 47.83 percent in the third quarter of 2023. Conversely, mid-market segment (**Region 2**) saw a significant drop in completed transactions, dropping to account for 20.75 percent from 36.96 percent in the previous quarter. However, the high-market segment (**Region 3**) registered a marginal rise in activity from 15.2 percent in the third quarter to 17.0 percent in the fourth quarter (**Figure 4a**).

Regarding house types, apartments, although still dominant, saw a decline in their share of completed transactions, accounting for 40.19 percent in the current quarter compared to 54.35 percent in third quarter of 2023. Bungalows maintained a relatively steady share at 29.91 percent, while Maisonettes experienced a notable increase to 29.91 percent from 15.22 percent in the previous quarter (**Figure 4b**).

Figure 4a: Quarterly distribution of house transactions by region (%)

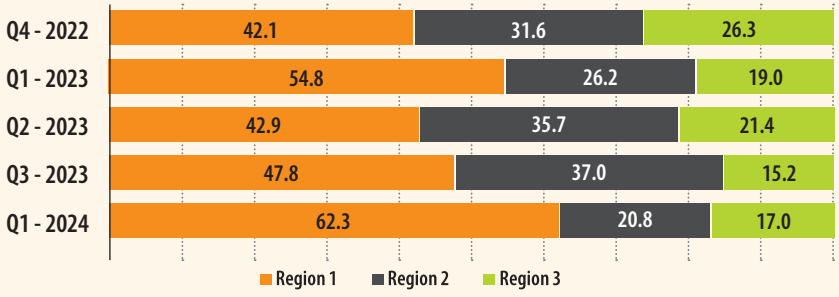
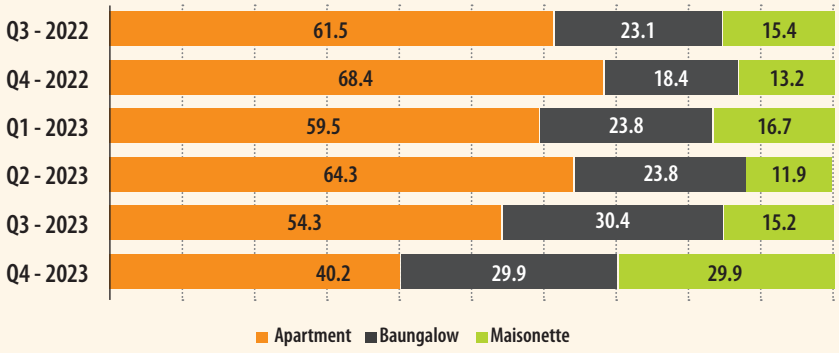


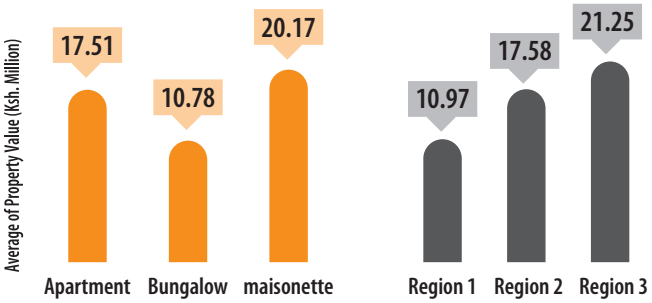
Figure 4b: Quarterly distribution of house transactions by house type (%)



Q4 Property Price Analysis show Varied Trends amid Economic Challenges

Amidst challenges like high inflation and a weak shilling, which reduced buyers' spending power and raised input costs for imported construction materials, respectively, analysis of property prices in the fourth quarter of 2023 reveals distinct variations along two primary dimensions (Figure 5).

Figure 5: House Prices By Region and Type of House



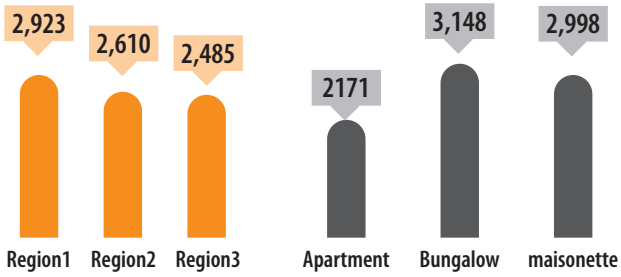
First, considerable variances are observable across different house types. For instance, the average price of a maisonette stood notably higher at Kes. 20.17 million, followed by apartments at Kes. 17.51 million and bungalows at Kes. 10.78 million. Secondly, disparities in costs are also apparent across various market segments. Properties in the high-market segment command significantly higher prices, with the average cost being approximately double that of the low-market segment.

Specifically, houses in the high-market segment averaged Kes. 21.25 million, compared to Kes. 17.58 million for the mid-market segment and Kes. 10.97 million for the low-market segment. These variations underscore the segmented nature of the housing market, influenced by both region and house type.

Moreover, examining plinth area variations of houses transacted during the quarter reveals discernible differences across regions and house types (**Figure 6**). Notably, the low-market segment houses boast the largest average plinth area at 2,923.2 square feet, surpassing mid-market segment and low-market segment with averages of 2,610.0 square feet and 2,485.4 square feet, respectively. Regarding house types, Bungalow exhibit the most extensive plinth area, averaging 3,147.6 square feet, followed by Maisonettes at 2,997.8 square feet. On the other hand, apartments have the lowest plinth area, with an average of 2,170.8 square feet.

Besides, a deeper examination of property values and plinth areas across various house types and regions during the quarter reveals significant disparities and patterns, which depicts a complex interplay between region-specific demand factors and structural preferences. For instance, looking at low-market segment, apartments have an average property value of approximately Kes. 11.78 million, whereas bungalows and maisonettes have values of about Kes. 10.10 million and Kes. 14.46 million respectively (**Figure 7a**). Meanwhile, the plinth areas vary significantly, with bungalows having the largest area (approximately 3,547.02 square feet), followed by maisonettes (3,263.91 square feet) and apartments (2,306.43 square feet) (**Figure 7b**).

Figure 6: Average plinth across the region & by house type



Similarly, in mid-market segment, we observe different patterns. Apartments have an average property value of Kes. 13 million, bungalows at Kes. 14.15 million and maisonettes at Kes. 18.17 million. In terms of plinth area, bungalows still maintain the largest area (3,928.82 square feet), followed by apartments (2,624.88 square feet) and maisonettes (1,291.20 square feet). High-market segment exhibits yet another set of variations. Here, we notice the highest property values with maisonettes at Kes 26.90 million, apartments at Kes 18.67 million and bungalows at Kes 14.14 million. However, in terms of plinth area, bungalows take the lead again with approximately 4,187.76 square feet, followed by maisonettes (3,803.24 square feet) and apartments (2,344.22 square feet).

Figure 7: Average property value area across the region and plinth area

Figure 7a: Average Property Value Area Across Regions by House Type (Kes in Millions)

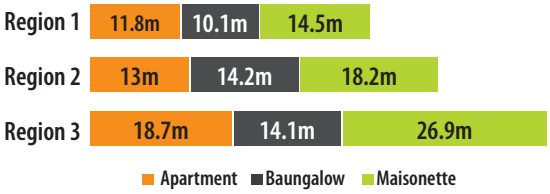
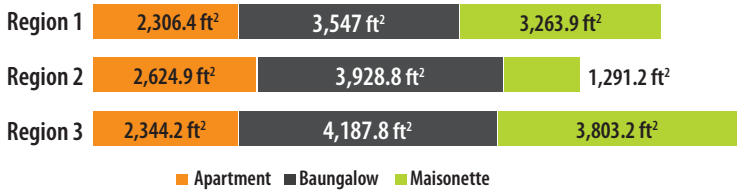


Figure 7b: Average Plinth Area Across Region by House Type (Sq feet)



Identification of the Drivers of House Prices based on Hedonic Regression

As explained in the Technical Note, the KBA-HPI computation depends on estimating weights and shadow prices, which change quarterly based on units transacted. Quantitative attributes like plinth area use averages as weights, while qualitative attributes like house type and region use proportions. These parameters, driving house price changes, stem from a hedonic regression reflecting the diverse nature of housing goods. Based on the hedonic regression analyses (whose results are presented in **Table 2**[1]), a significant portion of house prices variations, reflected on fundamental movements. The model's goodness of fit, measured by the F-statistic (F (8,88) =13.31), suggests a satisfactory fit to the data, with fundamental drivers explaining 54.7 percent of observed variations. In the fourth quarter of 2023, hedonic regression estimates reveal three main patterns regarding shadow price attributes:

- First, structural characteristics, notably number of bedrooms, bathrooms and floors, demonstrate significant impacts on price movements. (See results in **Table 2)**. For the homes transacted, an additional bedroom attracted 20.5 percent higher price. Similarly, an additional bathroom implied a 15.64 percent increase in price, all other factors remaining the same[2].
- Second, considering property types, Apartments exhibit no significant differences with masionette prices. The prices of bungalows were 36.4 percent lower than those of maisonettes.
- Lastly, regional factors play a role, with houses in low-market segment exhibiting a statistically significant difference in the prices of houses in region 1 compared to those in region 2 and not in region 3.

> Property value and plinth area depends on region and house type: increasing as one moves from low to high market segments, irrespective of type.

The computation of the KBA-HPI is underpinned by estimating the weights and the shadow prices. The weighting scheme applied to the shadow prices varies from one quarter to another and relates to the units transacted during the quarter (See **Technical Note** for details).

The weights applied in the case of quantitative attributes (i.e., plinth area, number of bedrooms, number of bathrooms, and number of floors) are their respective averages, and proportions are applied as weights in the case of the qualitative attributes (i.e., type of house, and the region). The qualitative and quantitative parameters, that drive the house price change and feed into the construction of the KBA-HPI, are based on an estimation of a hedonic regression. The regression generates the shadow prices or marginal contributions, taking cognizance of the heterogeneous nature of housing goods best characterized by their attributes.

The hedonic regressions recognize that a dwelling is composed of a bundle of characteristics for which no market for them exists, as they cannot be sold separately, so the prices of the characteristics are not independently observed. The demand and supply for the properties implicitly determine the characteristics' marginal contributions to the prices of the properties.

Technical Note

The index follows a Laspeyers index method. In this method, the index is computed by getting the ratio of the estimated current quarter price from the hedonic method (multiplied by the weights of the preceding quarter) to the price of the preceding quarter (multiplied by the respective weights of that quarter).

The weights of the quantitative variables are obtained by getting their respective mean values. For the dummy variables however, their weights are computed as the proportions of the number of houses possessing a certain attribute to the total number of houses. Thus the index is computed by the formula:

$$Index = \sum_{i=1}^{n} w_i \frac{\hat{P}_1}{\hat{P}_0} = \frac{\sum_{i=1}^{n} w_0 \hat{P}_1}{\sum_{i=1}^{n} w_0 \hat{P}_0}$$

Where; $\hat{P}_1$ is the shadow price from the estimated hedonic function for the current quarter;

$\hat{P}_0$ is the shadow prices from the estimated hedonic function for the preceding quarter;

And w_0 are the weights of the respective variables for the preceding quarter.

1. For comparison purposes, the hedonic regression estimates for the second and third quarter of 2023 are presented in **Tables 3** and **4**, respectively annexed to this report.
2. The average number of bedrooms in stands at 4, equating to 1 percent representing 0.04 bedrooms. However, practicality speaking this is effectively 0 bedrooms. Thus, to operationalize the bedroom interpretation, we use 25 percent as it represents 1 bedroom; hence, a 25% increase in bedrooms predicts roughly a 20.5% price hike. Similar reasoning applies to bathrooms, with an average of 3 per home. Hence, 33.33 percent approximates 1 bathroom. Thus, a one-bedroom increase results in 15.64 increase in price.

Table 2: Housing Price Index Drivers for Quarter 4 of 2023

Source	SS	df	MS
Model	26.14	8.0	3.27
Residual	21.61	88.0	0.25
Total	**47.75**	**96.00**	**0.50**

Number of obs = 97.00
F(8, 88) = 13.31
Prob > F = 0.00
R-squared = 0.547
Adj R-squared =0.506
Root MSE = 0.496

	Coef	Std. Err.	t - stats	P>|t|	[95% Conf. Interval]	
Constant	14.716	0.420	3.280	0.002	13.881	15.550
Plinth Area	0.004	0.030	0.130	0.897	-0.056	0.063
No. of Bedrooms	0.823	0.278	2.960	0.004	0.271	1.375
No. of Bathrooms	0.469	0.175	2.680	0.009	0.121	0.818
No. of Floors	0.032	0.070	0.450	0.652	-0.107	0.171
House Type Dummy						
Apartment	-0.032	0.147	-0.220	0.826	-0.326	0.261
Bungalow	-0.364	0.147	-2.480	0.015	-0.655	-0.072
Regional Dummy						
Region 1	-0.418	0.202	-2.070	0.042	-0.821	-0.016
Region 3	0.056	0.214	0.260	0.795	-0.370	0.481

Notes:

1. All the Quantitative variables (Plinth Area, No. of Bedrooms, No. of Bathrooms, No. of Floors) enter the hedonic regression function in their natural logarithm. The house price is also expressed in its natural logarithmic form.
2. Reference categories for the dummy variables for house types and region were maisonettes and region 2, respectively.

Housing Price Index
Quarter 4, 2023
98.22

Table 3: Housing Price Index Drivers for Quarter 3 of 2023

Source	SS	df	MS
Model	17.72	8	2.21
Residual	12.32	37	0.33
Total	**30.03**	**45**	**0.67**

Number of obs = 46.00
F(8, 37) = 6.65
Prob > F = 0.00
R-squared = 0.590
Adj R-squared = 0.501
Root MSE = 0.577

	Coef	Std. Err.	t - stats	P>|t|	[95% Conf. Interval]	
Constant	13.339	1.038	0.000	0.999	11.263	15.442
Plinth Area	0.269	0.134	2.010	0.052	-0.003	0.541
No. of Bedrooms	0.784	0.629	1.250	0.220	-0.490	2.059
No. of Bathrooms	0.585	0.445	1.320	0.196	-0.316	1.486
No. of Floors	0.105	0.106	0.980	0.331	-0.111	0.320
House Type Dummy						
Apartment	0.206	0.301	0.680	0.498	-0.403	0.815
Bungalow	-1.065	0.369	-2.880	0.007	-1.813	-0.317
Regional Dummy						
Region 1	-0.509	0.638	-0.800	0.430	-1.800	0.783
Region 3	-0.846	0.680	-1.240	0.222	-2.224	0.533

Notes:

1. All the Quantitative variables (Plinth Area, No. of Bedrooms, No. of Bathrooms, No. of Floors) enter the hedonic regression function in their natural logarithm. The house price is also expressed in its natural logarithmic form.
2. Reference categories for the dummy variables for house types and region were maisonettes and region 2, respectively.

Housing Price Index
Quarter 3, 2023 **99.75**

Table 4: Housing Price Index Drivers for Quarter 2 of 2023

Source	SS	df	MS
Model	20.11	7	2.87
Residual	6.97	34	0.20
Total	**27.08**	**41**	**0.66**

Number of obs = 42.00
F(7, 34) = 14.02
Prob > F = 0.00
R-squared = 0.743
Adj R-squared = 0.690
Root MSE = 0.453

	Coef	Std. Err.	t - stats	P>|t|	[95% Conf. Interval]	
Constant	14.716	0.420	3.280	0.002	13.881	15.550
Plinth Area	0.004	0.030	0.130	0.897	-0.056	0.063
No. of Bedrooms	0.823	0.278	2.960	0.004	0.271	1.375
No. of Bathrooms	0.469	0.175	2.680	0.009	0.121	0.818
No. of Floors	0.032	0.070	0.450	0.652	-0.107	0.171
House Type Dummy						
Apartment	-0.026	0.258	-0.100	0.921	-0.549	0.498
Bungalow	-0.550	0.263	-2.090	0.044	-1.084	-0.015
Regional Dummy						
Region 1	-0.468	0.211	-2.220	0.033	-0.897	-0.040
Region 3	0.000	0.000	0.000	0.000	0.000	0.000

Notes:

1. All the Quantitative variables (Plinth Area, No. of Bedrooms, No. of Bathrooms, No. of Floors) enter the hedonic regression function in their natural logarithm. The house price is also expressed in its natural logarithmic form.
2. Reference categories for the dummy variables for house types and region were maisonettes and region 2, respectively.

Housing Price Index
Quarter 2, 2023
92.25

THE DEFINITION OF THE SUB-REGIONS

REGION 1
Athi River, Mlolongo, Mavoko, Nakuru, Ngong, Ruaka, Syokimau, Embakasi, Kahawa Wendani, Thika, Mtwapa, Utange, Kitengela, Kiembeni, Nyeri, Likoni, Eldoret, Ruiru, Kilifi,Thika road (Kasarani, Roysambu, Ruaraka), Meru, Bungoma.

REGION 2
Thindigua (Kiambu Road), Kiambu, South B, South C, Kabete, Komarock, Imara Daima, Membley, Buruburu, Rongai, Waiyaki Way (Uthiru, Regen, Kinoo, Kikuyu), Mbagathi road, Ngong Road, Langata.

REGION 3
Kileleshwa, Kilimani, Lavington, Westlands, Spring Valley, Riverside, Milimani (Kisumu), Milimani (Nakuru), Runda, Karen, Garden Estate, Parklands, Ridgeways, Muthaiga, Loresho, Kitisuru, Adams Arcade, Nyali, Mountain View, Nyari.

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