

The impact of zoning reform on property prices within lower Hutt, Wellington

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ABSTRACT

Zoning regulation can have a significant effect on property values by restricting types of development in a particular area. By focusing on the implementation of Hutt City Council's District Plan Change 43, this study examines the effect of zoning changes on residential property prices in Lower Hutt, New Zealand. Using transaction records of 100 residential properties and employing multivariate regressions, the results show that properties affected by the zoning reforms experienced lower appreciation in value compared to unaffected properties.

Keywords: Zoning, House prices, New Zealand

INTRODUCTION

Access to affordable housing within New Zealand has evolved into a significant cause of concern for policymakers, economists, and communities collectively. For existing homeowners, rising house prices are providing benefits in the form of increased material wealth. However, for aspiring homeowners, these rising house prices only serve to heighten barriers to purchase. As per research conducted by Stats NZ (2020) during the 2018 census, the proportion of individuals residing in their own homes was recorded as its lowest level in the previous 70 years. This notable decline in home ownership can be attributed to its inverse relationship with house prices. This trend is supported by the data generated through the 2006 and 2018 census which revealed ownership rates fell from 66.9% to 64.4%, while average house prices grew upwards of 70% (StatsNZ, 2020; Quotable Value, 2021; McLeay, 2022). Figure 1 illustrates cumulative house inflation compared with increases in average hourly earnings. It is evident that over the period 2015-2020, house prices notably increased at a faster rate than wages (StatsNZ, 2020). As of current standards, housing costs are consuming a disproportionate share of household income and failure to rectify this issue would lead to excessive financial strain, poverty, and potential homelessness (McLeay, 2022). Hence, it is important to address the issue of housing affordability to improve social wellbeing and economic growth.





Figure 1. Cumulative house price inflation compared with increase in average hourly earnings, by selected regions in New Zealand, March 2017 - September 2020.

Source: StatsNZ, 2020

Lower Hutt, a city within the Wellington region, is emblematic of New Zealand's housing affordability crisis (NZ Herald, 2020). Although Lower Hutt City is merely a microcosm of the broader challenges facing the New Zealand housing sector, it provides valuable evidence to town planners and policymakers as to steps and actions that can be undertaken to address these overarching issues. This study offers an examination of the relationship between zoning regulation reforms and house prices in Lower Hutt City. Lower Hutt City was selected for this study due to its widespread district plans to enable housing intensification through zoning reforms.

The supply of housing is widely considered as a key factor affecting housing affordability (Maltman & Greenaway-McGrevy, 2024). Within Lower Hutt City, residential property values have experienced a substantial surge in the median price for houses over the past two decades, from approximately \$170,000 in 2002 to \$340,000 in 2012. This represents a price surge that exceeded the general inflation rate by threefold during the same period (Hutt City Council, 2022). Additionally, research conducted by Quotable Value Ltd, on behalf of the Hutt City Council, revealed average residential property values increased a noteworthy 24% in Lower Hutt from 2013 to 2016, with certain suburbs seeing even steeper rises ranging from 30 to 35% (Hutt City Council, 2022). Despite the pronounced surge in house prices, the housing market in Lower Hutt failed to correspondingly respond by expanding its supply. As of 2017, the annual supply of new dwellings stood at 150 units. However, compared to the housing needs (as of 2017) for the existing population, an average of 170 new units were required, leaving no allowance for potential population growth (Hutt City Council, 2022).



A major zoning change known as District Plan Change 43, was first publicly notified, and proposed in November 2017 and was fully operative from 23 February 2021 (Hutt City Council, 2022). The objective of District Plan Change 43 was to facilitate an increase in housing capacity and offer a broader spectrum of housing styles and sizes with the introduction of medium-density residential areas within the current urban confines of the district. Prior to the proposal of District Plan Change 43, 83% of Lower Hutt City's housing stock was zoned within the General Residential Activity Area, which typically permitted detached dwellings of up to two storeys (Maltman & Greenaway-McGrevy, 2024; Hutt City Council, 2022).

District Plan Change 43 enabled the implementation of two new zones: (1) Suburban Mixed-Use Activity Area - which introduced a building height regulation of 12 metres (3-4 storeys), enabling ground-floor commercial-use spaces such as retail shops and cafes to be along residential apartments/ office spaces on the upper levels; and (2) Medium Density Residential Activity Area - which introduced a building height regulation of 10 metres (3 storeys + allowance for roof pitch), enabling increased opportunities for terrace housing and low-rise apartments (Hutt City Council, 2022). The decision was made to implement the two new zones across eight selected suburban centres known for their excellent accessibility to public transportation, amenities such as shops and schools, as well as recreational facilities. These areas are within the following suburbs: Stokes Valley, Taita, Naenae, Avalon, Epuni, Waterloo, Waiwhetu, and Wainuiomata (Hutt City Council, 2022).

The effects of District Plan Change 43 on housing starts were previously examined by Maltman and Greenaway-Mcgrevy (2024) in a working paper. Their research aimed to assess how the zoning reforms impacted housing starts in Lower Hutt City. Their findings reinforced the existing evidence indicating that a significant easing of limitations within zoning can lead to a notable increase in construction activity, thereby boosting supply. In light of this, there lies an opportunity to add to this research by examining the influence District Plan Change 43 had on house prices. Further investigation into existing literature found research on the effects of zoning reforms on house prices within various cities including Auckland in New Zealand, as well as Brisbane, Melbourne, Perth, and Sydney in Australia. Table A1 in Appendix shows a summary of the relevant studies. Consistently across these cities, the research concluded that while densifying urban areas may enhance housing supply, relying solely on zoning changes is unlikely to result in significantly more affordable housing. These results were found in papers published by, for example, Neukranz (2021), Murray and Limb (2022), and Greenaway-McGrevy et al. (2020).

Our study aims to investigate the impact of zoning changes from general residential to medium-density residential on property values in Lower Hutt, due to the influence of District Plan Change 43 of Hutt City Council (effective- 21 February 2021). It is worth noting that the purpose of Plan Change 43 is to (1) provide greater housing capacity and address affordability concerns within the property market (Hutt City Council, 2022). Therefore, this study aims to; (1) verify residential house prices within the reformed zones became more affordable following Plan Change 43, and (2) discuss whether zoning reforms alone are sufficient to address the affordability concerns within Lower Hutt City.

The dataset consists of 100 residential properties that have undergone two transactions within the last seven years. The initial transaction occurred before the full implementation of District



Plan Change 43, while the subsequent transaction took place after its full implementation on 23 February 2021. Among the properties, 33 were directly impacted by Plan Change 43, while the remaining 67 properties are situated in the surrounding areas and suburbs but were not influenced by the zoning changes brought on by the plan.

Controlling for other attributes of houses, our multivariate regressions suggest that houses affected by the zoning reforms experienced lower appreciation in value compared to unaffected properties. In light of the prevalent affordability challenges in many of New Zealand's major cities, the findings of this research will be of great significance to various stakeholders including local city councils, developers and real estate investors, homeowners, and residents as well as urban planners and policy makers.

The rest of paper is structured as follows. Section 2 outlines the data collection process as well as the methodology approach undertaken to conduct this research. Section 3 presents the results and section 4 concludes by providing implications of the findings.

DATA & METHODOLOGY

Data

District Plan Change 43 implemented Suburban Mixed-Use and Medium Density Residential Activity Areas within eight selected suburban centres known for their excellent accessibility to public transportation, amenities such as shops and schools, as well as recreational facilities. These areas are within the following suburbs: Stokes Valley, Taita, Naenae, Avalon, Epuni, Waterloo, Waiwhetu, and Wainuiomata (Hutt City Council, 2022).

In obtaining the dataset for this study, transaction records of residential properties were gathered through Propertyvalue.co.nz (by CoreLogic). The following data was collected for each residential property: Address, Affected by Plan Change 43 (Yes (=1) or No (0)), Property Type, Dwelling Size, Number of bedrooms, Number of bathrooms, Number of carparks, Distance to the nearest school, Distance to nearest transport station, Distance to nearest shopping centre, and Holding period of property.

In cases where Propertyvalue.co.nz (by CoreLogic) could not provide data for certain variables, secondary sources were utilised. These included geographic information system (GIS) maps of the affected areas obtained by Hutt City Council in a document titled; 'Decision on Proposed Plan Change 43: Medium Density Residential and Suburban Mixed Use Activity Areas. GoogleMaps was employed to calculate distances to the nearest amenity and addresses were cross-referenced with GIS maps provided by the Hutt City Council to determine whether properties were affected by Plan Change 43.

In the course of obtaining data, residential properties that were purchased before the full implementation of District Plan Change 43 (23 February 2021) and redeveloped either through subdivision or townhouses were ignored. In addition, properties that underwent major renovations were disregarded. With the expectation of the above, it



is important to note that property prices vary over time with inherent movement within the market and industry. Therefore, data on properties that were not affected by Plan Change 43 were also collected to enable cross-comparisons and additional analysis.

Table 1. Variable description and data sources

Abbreviation	Variable	Definition	Source
Price 1	Property transaction before full implementation of District Plan Change 43 (from 1 January 2017 to 23 February 2021)	Sale price in NZ Dollars (\$)	Core Logic - Propertyvalu es.co.nz
Price 2	Property transaction after full implementation of District Plan Change 43 (from 1 January 2017 to 23 February 2021)	Sale price in NZ Dollars (\$)	Core Logic - Propertyvalu es.co.nz
zone_affected	Property affected by Plan Change 43	Dummy variable 1 = Yes affected by Plan Change 43, 0 = No, Not affected by Plan Change 43,	Core Logic - Propertyvalu es.co.nz, (Hutt City Council, 2019a)
h_type	House Type	Dummy variable 1 = Yes, House 0 = No, not house (Townhouse, Duplex, Apartment or Flat)	Core Logic - Propertyvalu es.co.nz
d_size	Dwelling Size	Size of Dwelling in Square Metres (m2)	Core Logic - Propertyvalu es.co.nz
bedrooms	Bedrooms	Number of Bedrooms	Core Logic - Propertyvalu es.co.nz
bathrooms	Bathrooms	Number of Bathrooms	Core Logic - Propertyvalu es.co.nz



carparks	Carparks	Number of Carparks	Core Logic - Propertyvalu es.co.nz
dis_schl	Distance to nearest School	Distance in Kilometres (km)	GoogleMaps
dis_trans	Distance to nearest Transport Station	Distance in Kilometres (km)	GoogleMaps
dis_shop	Distance to nearest Shopping Center	Distance in Kilometres (km)	GoogleMaps
hold_per	Holding period	The period between the two transactions (Years, Months, Days)	Core Logic - Propertyvalu es.co.nz

The dataset comprises 100 residential properties, each having undergone two transactions within the last seven years. The initial transaction occurred before the full implementation of District Plan Change 43 (from January 1, 2017, to February 23, 2021), while the subsequent transaction took place after its full implementation on February 23, 2021. Of these properties, 33 were directly impacted by Plan Change 43. The remaining 67 properties are located in surrounding areas and suburbs, unaffected by the zoning changes introduced by Plan Change 43.

METHODOLOGY

We perform hedonic multivariate regression models using two version of house price changes as a dependent variable: Logarithm of changes in prices in two transactions and growth in property prices. Ten explanatory variables were considered to have an effect on the dependent variable. Definitions of the variables utilised in the regressions are presented in Table 1. We specify the empirical models as follows:

Log (Changes in prices) $i = \beta 0 + \beta 1$ Zone_affected $i + \beta 2$ Control_variables i + e i (1) Growth in property prices $i = \beta 0 + \beta 1$ Zone_affected $i + \beta 2$ Control_variables i + e i (2)

RESULTS



Descriptive Analysis

The descriptive statistics for the variables collected in the dataset are outlined in Table 2. All properties in the dataset were located within the same suburbs and were no more than; 2.5km from the nearest school, 1.7km from the nearest transport station and 6.3km from the nearest shopping centre. The average property recorded within the dataset was considered to be a 110 m2 dwelling with average 3 bedrooms, 1 bathroom and 1 carpark (rounded to 0 decimal places).

In analysing the sale transactions data for all properties in the dataset, we observe that properties increased in value by an average of \$286,555 between the two sale dates. This represents an increase in value of 57.92%.

Variables	Obs	Minimum	Maximum	Mean	Std. Deviation
DwellingSize (m2)	100	60	260	110.37	36.12
Bedroom (no. of bedrooms)	100	1	5	2.83	.71
Bathroom (no. of	100	1	4	1.32	.56
Carpark (no. of car parks)	100	0	3	1.29	.60
Dis_School (km)	100	.05	2.50	1.08	.64
Dis_Transport (km)	100	.00	1.70	.60	.33
Dis_ShoppingCentre (km)	100	.10	6.30	2.46	1.67
SalePrice_beforeZoningCha	100	315,000	1,200,000	532,495	158,023
SalePrice_AfterZoningCha	100	441,000	1,635,000	819,051	226,614
HoldingPeriod (days)	100	102	2422	1,339	477
Price change (\$)	100	3,000	826,000	286,555	157,818
Price growth (%)	100	0.57	150.93	57.92	32.01

Table 2. Descriptive Statistics

Tables 3 and 4 present the regression results using Log (Price change) and Price growth as the dependent variable, respectively. In column 1, the various explanatory



variables within the data set are included. Following this, columns 2-7 outline six individual estimations with selected explanatory variables. This is done to comprehensively analyse whether the estimation results are sensitive to smaller sample sizes and/or specific group attributes.

Throughout the six models, we find that the zoning variable is consistently significant with a negative coefficient. This suggests that the zoning regulations have a robust and negative impact on the Log (Price change). The resultant negative coefficient indicates that zoning reform is associated with a lower price variance, which suggests that properties affected by zoning inflated in value less than those properties not affected by zoning.

The regression results also show that the dwelling size for properties is statistically significant in models (1) & (2) but not in others. This suggests that its impact may depend on the presence of other variables. When significant, the positive coefficient indicates that larger dwelling sizes are associated with a higher price variance. However, this is considered to be inconsistent across models and therefore this effect is potentially influenced by other factors. Regarding the property attribute variables, which consist of Property Type, Bedrooms, Bathrooms, and Carparks, we find that there is a lack of statistical significance across all models. This suggests that these factors do not appear to have a strong or consistent impact on the price variance within the context of these models. Similar results are seen in variables that explain the proximity to key amenities.

Across the six models, the proportion of variance in the dependent variable, Log (Price change), ranges from 0.073 to 0.187. This indicates that the models explain between 7.3% and 18.7% of the variance in Log (Price change).

Table 3. Regression Results: Log (Price Change) as a Dependent Variable

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Dependant Variable: Log (Price change)						
	(1)	(2)	(3)	(4)	(5)	(6)
Explanat	Zoning +	Zoning +	Zoning +	Zoning +	Zoning +	Zoning +
ory	House	House	house	Distance	House	House
Variables	Attributes	Attributes [once with only dwelling	attributes [once with only Bed, Bath &	to Amenities	Attributes + Distance to Amenities	Attributes + Distance to Amenities + Holding
		size]	Car]			Period
Zoning	-0.251** (-2.597)	-0.242** (-2.543)	-0.236** (-2.428)	-0.248** (-2.307)	-0.271** (-2.578)	-0.270** (-2.553)
Property Type	-0.114 (-1.094)	-0.124 (-1.246)	-0.110 (-1.045)		-0.109 (-1.037)	-0.103 (-0.974)
Dwelling Size	0.280* (1.732)	0.304*** (3.075)			0.238 (1.428)	0.253 (1.497)
Bedrooms	-0.012 (-0.075)		0.114 (1.114)		0.009 (0.058)	0.005 (0.031)
Bathroom s	0.135 (1.056)		0.217* (1.804)		0.186 (1.399)	0.194 (1.449)
Carparks	-0.124 (-1.122)		-0.097 (-0.878)		-0.133 (-1.174)	-0.152 (-1.287)
Distance to School				-0.003 (-0.028)	0.002 (0.024)	0.008 (0.079)
Distance to Transport				0.022 (0.194)	-0.015 (-0.137)	-0.022 (-0.197)
Distance to Shopping Centre				0.108 (1.024)	0.155 (1.463)	0.164 (1.528)
Holding Period						0.063 (0.612)
R Square	0.163	0.14	0.136	0.073	0.183	0.187



Notes: t-statistics are included in parentheses. Asterisks indicate significance at 10% (*), 5% (**), and 1% (***) levels respectively. The Variance Inflation Factors (VIFs) for all explanatory variables were below five.

Regression results using Price growth are outlined in Table 4. Similar to Table 3, the zoning variable is consistently significant with a negative coefficient. We also find that house prices grow more slowly compared to prices of other types of residential properties, as indicated by the negative and significant coefficient for Property Type across various specifications.

Table 4. Regression Results: Price Growth as a Dependent Variable



Dependant Variable: Price Growth						
	(1)	(2)	(3)	(4)	(5)	(6)
Explanatory Variables	Zoning + House Attributes	Zoning + House Attributes [once with only dwelling size]	Zoning + house attributes [once with only Bed, Bath, & Car]	Zoning + Distance to Amenities	Zoning + House Attributes + Distance to Amenities	Zoning + House Attributes + Distance to Amenities + Holding Period
Zoning	-0.261*** (-2.616)	-0.266*** (-2.718)	-0.261*** (-2.638)	-0.262** (-2.434)	-0.272** (-2.483)	-0.269** (-2.458)
Property Type	-0.202* (-1.875)	-0.178* (-1.739)	-0.202* (-1.885)		-0.199* (-1.818)	-0.187* (-1.711)
Dwelling Size	0.004 (0.025)	0.100 (0.979)			-0.024 (-0.139)	0.004 (0.024)
Bedrooms	0.150 (0.927)		0.152 (1.157)		0.164 (0.986)	0.156 (0.937)
Bathrooms	0.039 (0.295)		0.040 (0.329)		0.071 (0.514)	0.087 (0.626)
Carparks	-0.078 (-0.680)		-0.077 (-0.686)		-0.084 (-0.708)	0.118 (-0.969)
Distance to School)			-0.008 (-0.082)	-0.001 (-0.007)	0.010 (0.093)
Distance to Transport)			-0.010 (-0.092)	-0.005 (-0.041)	-0.018 (-0.152)
Distance to Shopping Centre)			0.079 (-0.747)	0.098 (0.887)	0.115 (1.032)
Holding Period						0.118 (1.111)
R Squared	0.106	0.094	0.106	0.069	0.115	0.127

Notes: t-statistics are included in parentheses. Asterisks indicate significance at 10% (*), 5% (**), and 1% (***) levels respectively. The Variance Inflation Factors (VIFs) for all explanatory variables were below five.



CONCLUSIONS

This study uses regression analysis to investigate the impact of zoning reforms on property prices. Specifically, this study focuses on the implications to property values and housing affordability within Lower Hutt, New Zealand following District Plan Change 43. Through this research, we aim to determine whether the instruction of medium-density residential areas has resulted in more affordable housing. In addition, we aim to further contribute to existing literature regarding the sufficiency of zoning reforms in addressing affordability concerns.

Transaction records of 100 residential properties within Lower Hutt were collected from Propertyvalue.co.nz (by CoreLogic). Among the 100 properties in the dataset, 33 properties were directly impacted by the zoning reforms, while the remaining 67 were not. To ensure accurate and unbiased results these 67 properties were located within the same suburbs and areas of those affected by zoning reform. In addition to the sale transactions, a range of property characteristics and variables were also collected. These are such as property type, dwelling size, number of bedrooms, bathrooms, carparks, and distance to amenities.

Our finding suggests that properties in areas that undergo zoning reform to increase housing density are more likely to experience lower appreciation in value compared to properties that are not affected by such reforms. It suggests that District Plan Change 43 had made the housing more affordable within the affected areas.

This result provides at least three implications. (1) Existing homeowners are seen to be disadvantaged by zoning reforms where their properties will appreciate less thus affecting their potential capital gains. Conversely, potential homeowners who are looking to purchase a home may see this as an advantage due to the relatively lower increase in property prices, making home ownership more affordable. This dynamic suggests increases in housing supply and affordability within the areas undergoing zoning reform. (2) In light of these findings, property investors who are looking to purchase a property for its long-term capital gains may be more attracted to properties which have not undergone zoning reform. Investment properties that are affected by zoning reform can lead to significantly lower returns. (3) Urban planners and policymakers may consider implementing zoning intensification and enable denser neighbourhoods to address the broader challenges of housing affordability.

In this study, only 100 residential properties were included in the dataset. This may not fully capture the dynamics within the housing market in Lower Hutt. Future research should examine a larger dataset and include additional properties and transaction periods. Lower Hutt City again presents a valuable opportunity to examine this effect following its announcement of District Plan Change 56. It will



enable intensification in residential areas with the introduction of high-density living. This presents an intriguing opportunity to identify whether high-density zoning brings larger effects in lower price variance and more affordable housing.

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APPENDIX

Table A1. Summary of Existing Literature

Author(s)	Objective(s)	Period	Place of Study	Method	Key Findings
Maltman & Greenaw ay- McGrevy , 2024	Measuring the effect of zoning reforms on housing starts in Lower Hutt.	2017- 2021	Lower Hutt, New Zealand	Time Series & Synthetic Control	Reforms generated a 3-4 folds increase in consent per capita and tripled the number of housing starts over the 6 years subsequent to the onset of the reforms.
(Greena way- McGrevy et al., 2020)	The effect of upzoning on house prices and redevelopment.	2010- 2017	Auckland, New Zealand	Regression	Increases in redevelopment premiums are found following significant upzoning. However, the overall effect on house prices depends on the economic potential for the site redevelopment.
Robert & Zahirovic -Herbert, 2021	The influence of privately initiated rezoning on housing prices.	June 2021	Fulton County, Georgia	Hedonic Regression & Propensity Score Matching	House Prices (within 0.75 miles) appreciate by 8.31% when nearby privately initiated rezoning. House prices decline by 21.26% when residential housing zones are converted to non-residential housing zones.
Kendall & Tulip, 2018	The Effect of Zoning on Housing Prices	2016	Perth, Sydney, Melbourne & Brisbane	Hedonic Regression	Zoning raised detached house prices across Sydney, Melbourne, Brisbane and Perth. Zoning has also raised the price of apartments well above the marginal cost of supply, especially in Sydney.



Dong & Hansz, 2019	Evaluate associations between zoning, development density and the sales prices of new and existing single-family homes.	March 2019	Portland, Oregon	Path analysis	Zoning exhibits a significant and direct association with the prices of existing single-family homes, particularly in higher-density zones.
Rehm & Filippova , 2008	Impact of geographically defined school zones on house prices.	21-year period	Auckland, New Zealand	Hedonic pricing models	The Influence of school zones on house prices was found to be not associated. This function was found to be largely in part due to the uncertainty of future zone boundary definitions.
Freemark , 2019	Impact of zoning reforms on property values and housing construction.	n.d	Chicago, Illinois	Difference- in- Differences tests	Robust increases in values are found for transactions on parcels that received a boost in allowed building size.
Neukran z, 2021	Identifying the effect of land use zoning changes on land values. Impact of rezoning as opposed to initial zoning.	2010- 2018	Hamburg, Germany	Fixed- effects panel estimation	As extensively studied in the United States, land zoning changes have a direct association with land values.
Phibbs & Gurran, 2021	Examining the role and significance of town planning in house prices.	2010- 2016	Perth, Sydney, Melbourne & Brisbane	Literature Review	Found an overemphasis on planning as a supply bottleneck has limited policy action on broader causes of housing inflation and affordability pressure.



Stacy et al., 2023	Examining whether increased density leads to greater affordability.	2000- 2019	United States of America	Panel Data	Found no statistically significant evidence to suggest that zoning reforms lead to an increase in affordable rentals.
Murphy, 2016	Examining the policy development and political dynamics of the housing supply issues.	n/a	Auckland, New Zealand	Discourse analysis	Housing development and urban planning are inherently political, involving clashes of values, interests, and political concerns.
Murray & Limb, 2022	Does zoning reforms for higher-density housing increase development and decrease prices?	1990- 2010	Brisbane, Australia	Regression	The capacity of zones alone is not a significant determinant of housing prices. While denser urban areas may present advantages, planners should not expect zoning changes alone to result in more affordable housing.
Anagol et al., 2021	Estimating the economic value of zoning reforms.	2016	São Paulo, Brazil	Regression	Higher income and education groups benefit the most from the reforms, due to their greater price sensitivity and the ability to move.
Greenaw ay- McGrevy , 2023	Can Zoning Reform Reduce Housing Costs?	2016	Auckland, New Zealand	Synthetic Control	Findings supported the proposal of large-scale zoning reforms in Auckland enhancing the affordability of family- sized housing when evaluated by rents.