

MAPPING THE HOUSING AFFORDABILITY IN BEKASI CITY

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ABSTRACT

High urban population growth increases the housing demand and housing prices due to its limitations. These increasing urban housing prices affect housing affordability, especially for urban families with low and medium incomes. If people could buy a house with a large area in the past, now they need years to save money to buy a house with a smaller plot area. This study aims to study the level of housing affordability in Bekasi City based on current property prices. This study uses a quantitative descriptive method with three stages of analysis, namely property price analysis based on location, purchasing power analysis, and affordability analysis of house prices in Bekasi City. For buildings area up to 60m², the price ranges from 350 to 800 million rupiahs, while the house purchasing power is less than 2.5 million per month. This research shows that most of the residents of Bekasi City cannot afford housing prices not only because of high land prices but rather its location.

Keywords: *purchasing power, house price, housing affordability, Bekasi city*

INTRODUCTION

Bekasi City is one of the agglomeration areas of DKI Jakarta with high population growth. Based on the data from BPS of Bekasi City (2021), the current population of Bekasi City is 3 million, with a population growth rate of 2.4%. The growth indicates that the Bekasi City population will continue to grow to reach 3.7 million people in 2023 (Bappeda Jabar, 2019). Population growth increased because of the birth rate and urbanization. This population growth resulted in the continuous development of Bekasi City.

The high population development in Bekasi City is accompanied by increasing demand for housing as one of the community's primary needs. The physical space in Bekasi City changes significantly with the increase in built-up areas due to the high demand for residential land, up to 105 hectares per year (Bappeda Jabar, 2019).

Limited available land and high land demand have resulted in rising property prices in Bekasi City.

The high rate of land-use change due to urban development will have a socio-economic impact on the community. According to Dixon and Macarov (1998) in Cahyadi and Surtiari (2009), socio-economic conditions can determine the ability of the population to meet their basic needs, one of which is a decent house. In 2020, there were 4.38% or around 134 thousand poor people in Bekasi City with a poverty line based on an average expenditure of Rp657.953,00 per month (BPS of Bekasi City, 2021). The residents in rapidly growing cities find it difficult to work in agriculture, but other sectors, such as industry and services, may not be able to absorb the entire workforce (Yunus, 2006; Cahyadi and Surtiari, 2009). Despite having a job, the increase in income is not proportional to the high increase in property prices. This condition affects housing affordability and can cause new problems related to people's house-purchasing power. The low house purchasing power, especially in low-income communities, results in a gap between the need and the housing provision (Mangeswuri, 2016).

The housing provision ideally fits the economic capacity of the population (Cahyadi and Surtiari, 2009). This research is to determine the level of housing affordability in Bekasi City by looking at the house purchasing power of the citizens based on the economic level and property prices in the city of Bekasi.

THEORY / RESEARCH METHODS

House Purchasing Power

Household income and expenses strongly influence a decision to buy a house. According to the consumption theory proposed by M. Friedman, there are two types of income: permanent income and temporary income (Iskandar, 2017). Fixed income is earned with a particular value at a given period. Meanwhile, temporary income is received with unpredicted value and time in advance. Besides household expenses, non-household expenses, such as school fees, also affect house-purchasing ability. Therefore, the number of dependents in the family affects the purchasing power of the house (Rostiana, 2011).

Firdaos (1997) in Widiastuti and Handayani (2013) describe the factors that affect people in buying a house, including location, population growth, consumer income, ease of access to loans, public facilities, house prices, and laws and regulations. People pay attention to the main components when buying a house are the land price and the building price (Primananda, 2010). Land price is considered based on the status of the land and its location. The building price is reviewed based on the type of building (permanent, semi-permanent, or non-permanent), the age of the building, shape, and size.

Housing Affordability

Housing affordability is access to a decent home (often through purchase) based on household budget (Galster and Lee, 2020). Housing affordability determines how much people's purchasing power is with their income to buy a house at a certain price level. Therefore, housing affordability is affected by income and housing price developments (Rostiana, 2011). In addition, affordability is also affected by household income management (Abd Aziz, et al, 2011). Several approaches measure housing affordability, including the income ratio, residual income or deficit affordability, and repayment affordability.

The income ratio approach is also called the affordability ratio in some literature (Bramley, 2011). Several researchers, such as Yates (2016) and Been, Ellen, and O'Regan (2019), used this approach. If the ratio of household expense to income does not exceed a specified standard, the house is affordable (Galster and Lee, 2020). Those whose consumption costs exceed the specified ratio have housing affordability problems. Hulchanski (1995) measures housing affordability using the concept of 'weekly salary for one month. It means the income in one week equals the cost of renting housing for one month. According to Kalugina (2016), affordable houses are houses where residents pay no more than 30% of their income for house expenses, including rental costs and utility needs. The US also has set the standard for affordable housing, which is 25-30% of the income of its residents (Jing Li, 2014).

The following approach is residual income or deficit affordability. Several researchers used this approach, such as Grigsby and Rosenberg (1975) and Stone (2006). A house is affordable if the residual income deducted from housing costs is sufficient to meet the needs of non-residential consumption. According to Bramley (2011), this approach reflects poverty by using consumption needs standards above and below the poverty line. If the residual income of a family is less than standard, then the family has housing affordability problems.

The third approach is repayment affordability. This approach assumes that the level of affordability is affected by the ability of a household to bear the burden of paying housing instalments (Hill, 2009; Rostiana, 2011). Bank associations and housing finance institutions usually use this approach. Samad, et al. (2017) conceptualize lifetime income affordability. It means the ability of those with permanent income will increase their income's value in the future. It becomes the target of the house rental or mortgage program (KPR) for those with long-term housing affordability.

Besides the approaches above, the ability to pay and willingness to pay can also indicate the level of housing affordability (Syamwil, Hanan, and Harapan, 2016; Jauhari and Manaf, 2014). This research used willingness to pay to examine the household's ability to pay housing instalments like the repayment affordability approach.

Research Methods

This study used a descriptive-quantitative method to describe a condition systematically (Kumar, 2011). This method describes the level of housing affordability in Bekasi City. There are three stages of analysis: property price analysis based on location, purchasing power analysis, and affordability analysis of house prices in Bekasi City.

The first stage of this research is the analysis of property prices. House price data in Bekasi City is obtained from property marketplace sites. Data were collected from each sub-district in Bekasi City by purposive sampling from April 17 to April 27, 2021. The data selected are houses built in the last two years with a maximum area of 60 m². Then, a distribution analysis was carried out to obtain the average house price per sub-district. The data were analysed in the form of distribution mapping of house prices to see the effect of location on the price.

The next stage is house purchasing power analysis. Data were collected through an online questionnaire from April 21 to April 27, 2021. The questionnaire was distributed to social media groups by snowball sampling method. Respondents are Bekasi City residents interested in buying a house, either their first house or a house for investment. The questionnaire obtained several data, such as income, expenses, the number of dependents in a family, and the budget respondents are willing to spend on monthly housing costs.

After property prices and house purchasing power analysis, the next stage is the analysis of housing affordability. This stage is carried out to see the ability of the residents to afford a house in Bekasi City, especially those in lower-middle economic levels. This stage is done by looking at the level of property prices in Bekasi City compared to the level of house purchasing power.

RESULTS AND DISCUSSION

Property Prices in Bekasi City

Property prices analyse 160 data samples from 12 sub-districts in Bekasi. There are ten samples from Bantar Gebang sub-district, ten samples from West Bekasi, seven samples from South Bekasi, nine samples from East Bekasi, six samples from North Bekasi, 19 samples from Jatiasih, 20 samples from Jatisampurna, seven samples from Medan Satria, 21 samples from Mustika Jaya, 16 samples from Pondok Gede, 17 samples from Pondok Melati, and 17 samples from Rawalumbu.

The lowest property price in Bekasi City from the sampling is Rp139.000.000,00, and the highest price is Rp1.450.000.000,00. The lowest average price is in Bantar Gebang Sub-district, with an average building size of 37.2 m² and the average size of the land is 62.7 m². The highest average price is in Pondok Gede Sub-district, with an average building size of 48.56 m² and the average land size of 75.06 m². Generally, the average house price in Bekasi City is Rp569.311.540,23, with an average building size of 44.55 m² and a land area of 69.39 m² (Table 1).

Table 1. Property Prices List

Sub-district	Minimum Price (Rp/ in million)	Average Price (Rp/ in million)	Maximum Price	Average size of land (m²)	Average size of house (m²)
Bantar Gebang	139	403,47	695	62,70	37,20
Bekasi Barat	285	521,28	875	58,30	41,00
Bekasi Selatan	675	755,04	836	89,43	49,57
Bekasi Timur	310	476,28	725	76,07	40,50
Bekasi Utara	310	529,23	900	64,08	47,92
Jatiasih	250	481,78	795	64,32	44,53
Jatisampurna	350	556,08	739,5	65,65	43,60
Medan Satria	413	547,56	850	69,22	46,22
Rawalumbu	360	558,12	915	71,12	45,82
Mustika Jaya	365	599,85	1.450	71,27	43,45
Pondok Gede	400	770,28	1.146,8	75,06	48,56
Pondok Melati	356	633,36	906	70,47	46,24
Grand Total	139	569,31	1.450	69,39	44,55

Based on their price, the houses were classified into five groups (Table 2). Group 1 is the houses under 150 million. The general characteristics of group 1 are small land and building size and located in kampong with low accessibility and facility. Due to land price inflation, the developer reduces the house price by land size. Several houses in this group have no carport. Group 2 is the houses worth 150-350 million. The houses in group 2 are in an area with better accessibility than group 1, despite the small land and the building size. Group 3 is the houses worth 351-550 million. The houses in this group are generally located in housing areas with simple designs. Group 4 houses worth 551-800 million. The houses in group 4 are the same as group 3 but have a larger building size and better accessibility than group 3. The houses in group 3 and group 4 are the most abundant in Bekasi City. The last is group 5, with a house value above 800 million. The houses are generally located in upper-middle-class housing with attractive designs.

Table 2. House Sample Characteristics

Group	House Facade	House Size (m ²)	Land Size (m ²)	District	Source
1		24	28	Bantar Gebang	Lamudi.com
2		30	50	Jatiasih	Rumah.com
3		36	60	Rawalumbu	Lamudi.com
4		44	60	Medan Satria	Lamudi.com
5		60	72	Jatiasih	Lamudi.com

Then, the data mapping was carried out based on the price classification and its location (Figure 1). From the distribution mapping, the sub-districts that are directly adjacent to DKI Jakarta have higher property prices compared to the sub-districts that are far from DKI Jakarta. In addition, accessibility to the city centre, toll roads, and public transportation, such as Trans Jakarta and Commuter Line, affects the property prices in Bekasi City. The closer a location to the city centre, the higher the property price. It indicates that location contributes to the value of a property.

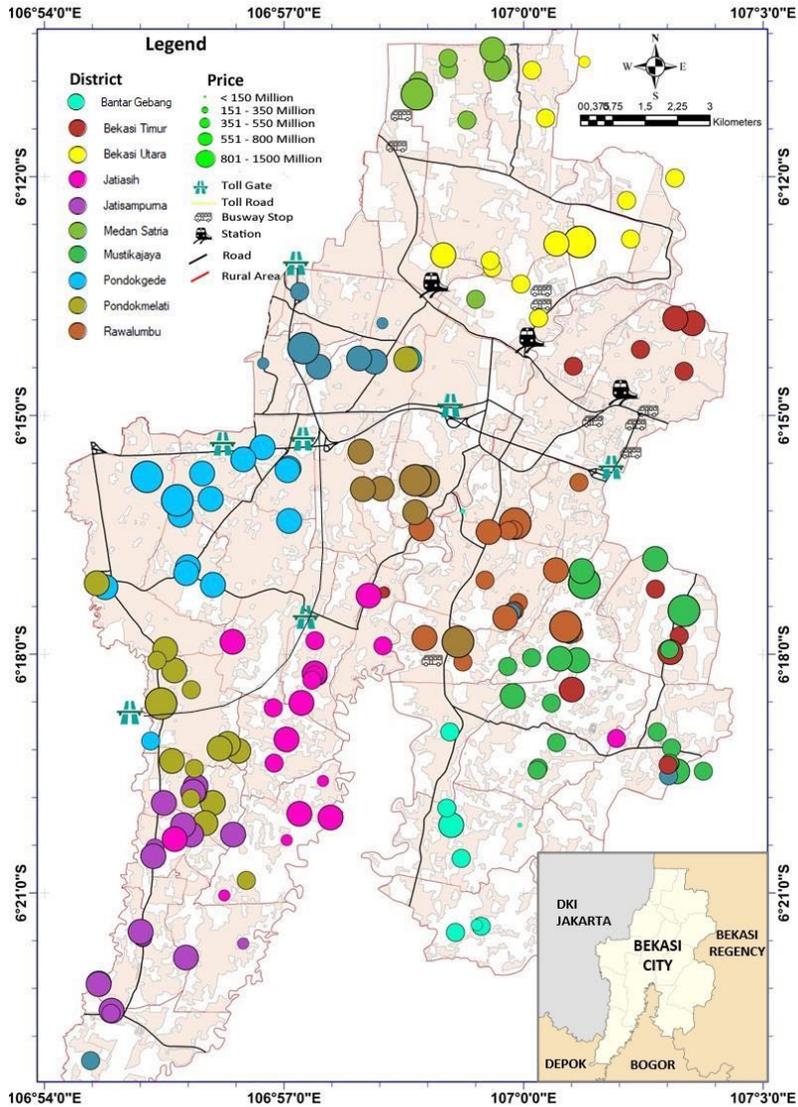


Figure 1. Distribution Map of Property Price in Bekasi City

House Purchasing Power in Bekasi City

The property prices data become a benchmark to determine the home purchasing power per month. A mortgage simulation assumes a 10-20% down payment (DP), 20 years period, and an 8% interest rate. This calculation found that for a house with a price of less than 150 million, the purchasing power is less than 1 million per month. For a house price of 150-350 million, the purchasing power is 1-2.5 million per month. For a house price of 351-550 million, the purchasing power is 2.5-4 million per month. For a house price of 551-800 million, the purchasing power is 4-

6 million per month, and for a price of more than 800 million, the purchasing power is more than 6 million per month (Table 3).

Table 3. Property Prices and Purchasing Power

Price (Rp/ in million)	Group	Mortgage Assumption on 20 years period	Payment per month (Rp/ in million)
<150	1	DP 20% Interest rate 8%	<1
150-350	2	DP 20% Interest rate 8%	1-2,5
351-550	3	DP 10% Interest rate 8%	2,5-4
551-800	4	DP 10% Interest rate 8%	4-6
>800	5	DP 10% Interest rate 8%	>6

An online questionnaire is to determine house purchasing power in Bekasi city. The total number of respondents was 62 people. The age group of 26-35 years (43.5%) dominates the respondents. The second most age group was 17-25 years (24.2%), the third was over 45 years old (22.6%), and the last one was 36-45 years old (9.7%). The respondents live in various sub-districts in Bekasi City, such as North Bekasi District (27.4%), East Bekasi (24.2%), Jatiasih (14.5%), South Bekasi (8.1%), Rawalumbu (6.5%), West Bekasi (6.5%), Pondok Gede (6.5%), Jatisampurna (4.8%), and Mustika Jaya (1.6%). The number of dependents in the family of each respondent varied, ranging from the most, 1 and 3 dependents (13 respondents) to the least nine dependents (1 respondent), as in Table 4.

Table 4. Respondent Attribute

Attribute	Category	Frequency	Attribute	Category	Frequency
Age	17 - 25 years old	24,2%	Working Location	Bekasi	72,58%
	26 - 35 years old	43,5%		Tangerang	3,23%
	36 - 45 years old	9,7%		Jakarta	19,35%
	> 45 years old	22,6%		Luar Jabodetabek	4,84%
	-	19,35%		Rawalumbu	6,5%
Number of Dependents	1 dependent	20,97%	Domicile	Bekasi Barat	6,5%
	2 dependents	14,51%		Bekasi Timur	24,2%
	3 dependents	20,97%		Bekasi Utara	27,4%
	4 dependents	12,90%		Bekasi Selatan	8,1%
	5 dependents	3,22%		Jatiasih	14,5%

Attribute	Category	Frequency	Attribute	Category	Frequency
	6 dependents	6,45%		Jatisampurna	4,8%
	7 dependents	-		Pondok Gede	6,5%
	8 dependents	-		Mustika Jaya	1,6%
	9 dependents	1,61%			

The respondent's economic data was obtained by asking about the total income and household expenses in a month, as shown in Table 5. The total income of respondents was divided into seven groups, consisting of the < 2.5 million group (12.9%), 2.5 - 5 million group (32.3%), 5 - 7.5 million group (21.0%), 7.5 - 10 million group (12.9%), 10 - 12.5 million group (3.2%), 12.5 - 15 million group (4.8%), and > 15 million group (12.9%). Most respondents are in the 2.5 - 5 million income group. Respondents also were asked about the total household expenses, including the expenditure on food consumption, transportation, electricity, and the cost of other household needs. It does not include expenses that are not fixed. The household expenses of respondents were divided into 5 groups, consisting of the < 1.5 million group (8.1%), 1.5 - 3 million group (37.1%), 3 - 4.5 million group (21%), 4.5 - 6 million group (11.3%), and > 6 million group (22.6%). Most respondents are in the 1.5 - 3 million household expenditure group.

Tabel 5. Respondent Economic Data

Attribute	Category	Frequency	Attribute	Category	Frequency
	< 2,5 million	12,9%		< 1,5 million	8,1%
	2,5 - 5 million	32,3%		1,5 - 3 million	37,1%
	5 - 7,5 million	21,0%		3 - 4,5 million	21,0%
Household income	7,5 - 10 million	12,9%	Household expenses	4,5 - 6 million	11,3%
	10 - 12,5 million	3,2%		> 6 million	22,6%
	12,5 - 15 million	4,8%			
	> 15 million	12,9%			

Furthermore, the home purchasing power data is obtained by asking the respondent's willingness to spend a budget for housing, whether it is for rent, paying installments, or saving to buy a house. The data of house purchasing power can be seen in Figure 2. The respondent's house purchasing power is divided into 5 groups, consisting of <1 million group (35.5%), 1 - 2.5 million group (37.1%), 2.5 - 4 million group (16.1%), 4 - 6 million group (3.2%), and >6 million group (8.1%).

Most respondents are in the 1 - 2.5 million purchasing power group and then the < 1 million purchasing power group.

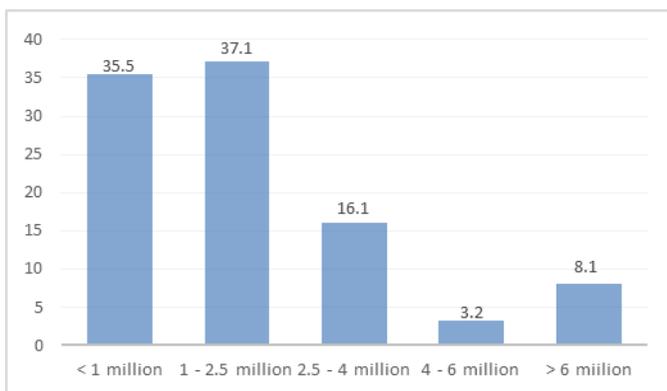


Figure 2. House Purchasing Power

Housing Affordability Based on Purchasing Power and Property Prices in Bekasi City

The result of the purchasing power analysis shows that most of the people in Bekasi City had the purchasing power of <1 million per month or group 1 (property prices <150 million) and then group 2 with purchasing power 1-2,5 million per month (property prices 150-350 million). Meanwhile, the most available property in Bekasi City was worth 351-550 million or in group 3 (purchasing power 2.5-4 million per month) and group 4 with a price of 551-800 million (purchasing power 4-6 million per month). The results can be seen in the diagram below in Figure 3.

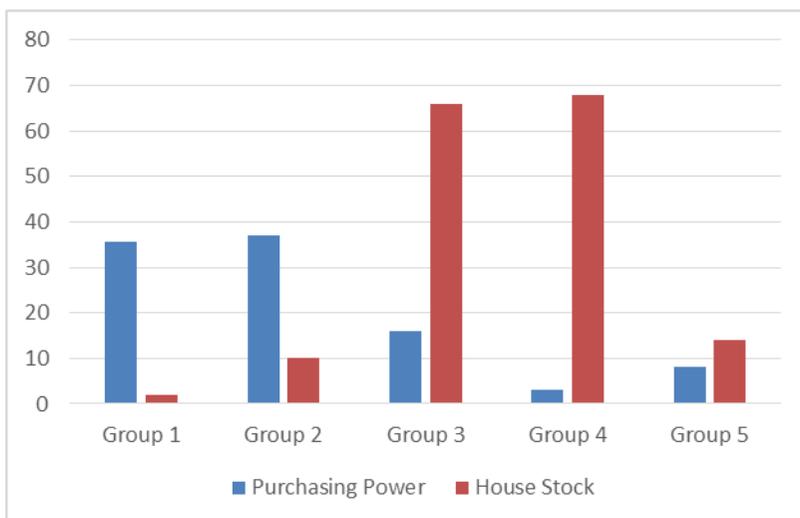


Figure 3. Comparison of Purchasing Power and House Availability

The demand for houses in group 1 and group 2 is high, but the housing stock is limited. In groups 3 and 4, housing stocks are numerous, but the demand is low. In group 5, the housing stock and the demand are balanced. These results indicate that people with purchasing power in groups 1 and 2, which are the lower-middle economic group, could not afford to buy a house in Bekasi City. Therefore, there is a mismatch between housing needs and housing stock in Bekasi City. It shows that there is a housing affordability problem in Bekasi City.

The impact of not having adequate access to affordable housing can occur at the household level and the macro-economic level (Galster and Lee, 2020). This situation may force some households to live in low-quality housing or slums. Alternatively, some households may be able to find decent housing, but they will be forced to reduce non-housing expenditures, such as food, education, and health. This decision will affect their level of welfare. Another alternative that can be done to get a decent house is to live far from where they work. It will increase travel time and reduce productivity at work. The impact of the housing affordability problem could also occur at the macro-economic level. The separation of residential and office locations results in congestion and high levels of pollution. In some developed countries, the housing affordability problem can also reduce fertility rates as young people delay their marriage and choose not to have children.

The private sector alone cannot be relied on to solve the housing affordability problems because their objective is solely profit. The government's role is needed to establish an effective housing delivery system to solve this problem. The affordable housing system is important in this process by assuring a minimum standard of housing for low-income people (World Bank, 2012). Moreover, expanding affordable housing stock will bring economic and social benefits, such as more demand for construction, building materials, and housing finance. It will create job opportunities and further economic growth (Nallathiga, 2010). A successful housing program is estimated by the number of affordable housing supplies and programs that meet household needs in both affordability and accessibility. The government must have a clear and detailed plan of housing supply and integrated public services to maximize the benefits of providing affordable housing for vulnerable families (Yang and Chen, 2014).

Public housing can be an option to achieve an affordable housing supply. But as a decent standard, the public housing must be well planned and designed according to the housing needs of Bekasi City.

CONCLUSIONS

Due to high housing demand and limited land for residential, property prices in Bekasi city are increasing. Similar property sizes can have different prices because of their location and accessibility to public facilities. Property prices with a maximum building area of 60 m² in Bekasi city are mostly around 350-800 million. Meanwhile, most residents could only afford a house worth under 350 million because their purchasing power is less than 2.5 million per month. Therefore, Bekasi city has a significant gap between housing demand and housing stock. It shows a

housing affordability problem in Bekasi city, especially among lower-middle-income people.

Housing affordability is a serious issue that has impacts on the household level and the macroeconomic level. The affordable housing system is essential to ensure a minimum standard of housing for the poor. Therefore, the government's role is needed to establish an effective housing delivery system to solve this problem. The government must estimate the housing supply and establish an effective housing program to meet the housing needs in Bekasi city.

The level of housing affordability for each location is different. It depends on property prices and house purchasing power. Further research with regular and consistent surveys related to housing affordability is needed, considering that the population continues to grow, and property prices generally change from time to time. What the best housing provision program in Bekasi city is also a research question that deserves future inquiry.

REFERENCES

- Abd Aziz, D. W., Hanif, N. R., and Singaravello, K. (2011) A Study of Affordable Housing within the Middle-Income Households in the Major Cities and Towns of Malaysia, *Australian Journal of Basic and Applied Sciences*, **5(8)**, 258-267.
- Bappeda Jabar. (2019) *Rencana Pembangunan Jangka Menengah Daerah Kota Bekasi 2018 - 2023*.
- Been, V., Ellen, I. G., and O'Regan, K. (2019) Supply skepticism: Housing supply and affordability. *Housing Policy Debate*, **29(1)**, 25–40.
- BPS Kota Bekasi (2021). *Kota Bekasi dalam Angka 2021*.
- Bramley, G. (2011). Affordability, poverty, and housing need: triangulating measures and standards. *Journal of Housing and Built Environment*, **27:2**, 133-151.
- Cahyadi, R., and Surtiari, G. A. K. (2009) Penduduk dan Pembangunan Perumahan di Jabodetabek: Tantangan Pengembangan Megapolitan Jakarta. *Jurnal Kependudukan Indonesia*, **4:1**, 55-72.
- Galster, G., Lee, K.O. (2020) Housing affordability: a framing, synthesis of research and policy, and future directions. *International Journal of Urban Sciences*, **25**, 7-58.
- Greene, M. and Ortuzar, J. (2002) Willingness to Pay for Social Housing Attributes: A Case Study from Chile. *International Planning Studies*, **7(1)**, 55-87
- Grigsby, W., and Rosenburg, L. (1975). *Urban housing policy*. New York: APS Publications.
- Jauhari, A. R. and Manaf, A. (2014) Tingkat Keterjangkauan PNS Berpenghasilan Rendah terhadap Perumahan Formal di Kota Semarang (Studi kasus : PNS Gol I dan II di Universitas Diponegoro). *Jurnal Pembangunan Wilayah dan Kota*, **10 (2)**, 153-165.
- Kalugina, A. (2016) Affordable Housing Policies an Overview. *Cornell Real Estate Review*, **14**.

- Lee, S.Y. and Yoo, S.E. (2019) Willingness to Pay for Accessible Elderly Housing in Korea. *International Journal of Strategic Property Management*, **24(1)**, 1-13.
- Li, J. (2014) Recent Trends on Housing Affordability Research: Where are We Up To? *Urban Research Group-CityU on Cities Working Paper Series*, **5/2014**.
- Mangeswuri, D. R. (2016) Kebijakan Pembiayaan Perumahan melalui Fasilitas Likuiditas Pembiayaan Perumahan (FLPP). *Jurnal Ekonomi dan Kebijakan Publik*, **7(1)**, Juni 2016.
- Nallathiga, R. (2010) Affordable Housing in Urban Areas: The Need, Measures and Interventions, *7th Thinkers and Writers Forum of 27th Skoch Summit Conference*, New Delhi.
- Prayuda, S. T. (2012) Variabel-Variabel yang Mempengaruhi Kemampuan Daya Beli Rumah (Studi Pada PT. Jamsostek, Kota Malang), *Jurnal Ilmiah Mahasiswa FEB Universitas Brawijaya*, **1(2)**, 1-10.
- Rostiana, E. (2011) Keterjangkauan Perumahan di Indonesia. *Trikonomika*, **10(2)**, 162 – 175.
- Samad, D., Zainon, N., Rahim, F., Lou, E. (2017) Malaysian Affordability Housing Policies Revisited. *Open House International*, **42(1)**, 44-51.
- Stone, M. (2006a). What is housing affordability: The case for the residual income approach. *Housing Policy Debate*, **17(1)**, 151–184.
- Widiastuti, E., and Handayani, SWE. (2013) Analisis Faktor-Faktor yang Mempengaruhi Keputusan Pembelian Rumah Bersubsidi dengan Menggunakan Analisis Regresi. *Prosiding Seminar Nasional Statistika Universitas Diponegoro 2013*.
- Yang, Z. and Chen, J. (2014) *Housing Affordability and Housing Policy in Urban China*. Berlin: Springer.
- Yates, J. (2016) Why does Australia have an affordable housing problem and what can be done about it? *The Australian Economic Review*, **49(3)**, 328–339.

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