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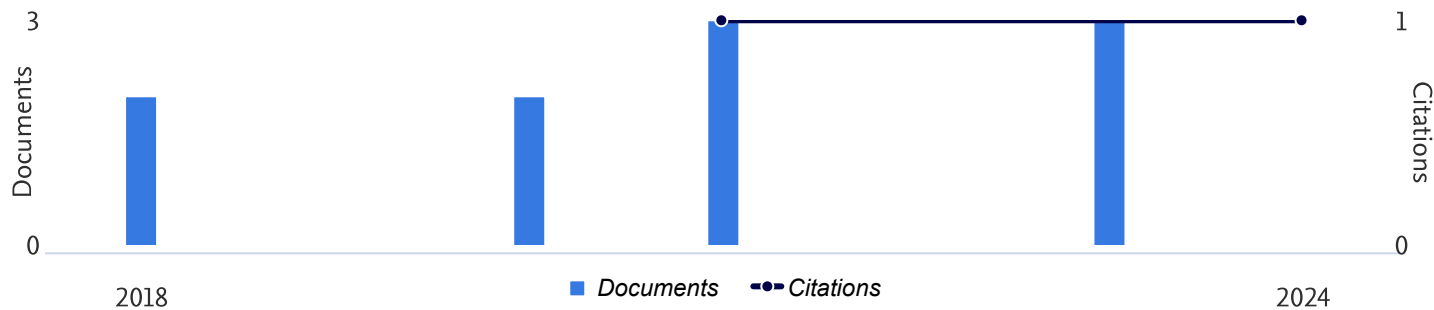


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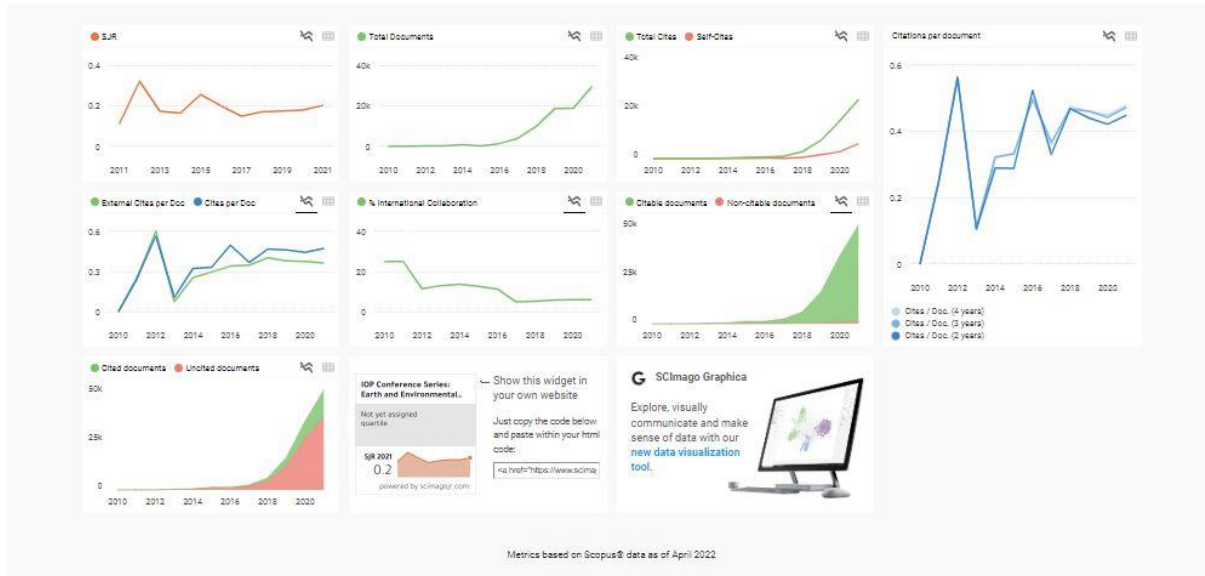
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Housing parks utilization behaviour based on income group in Jabodetabek area

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Abstract. Housing parks are one of the shared facilities in planned housing. Its function is to support the quality of life and social sustainability. To create a sustainable housing park needs a pattern of utilization behaviour of its inhabitants. The aim of this study is to identify housing park utilization behaviour based on their level of income. This research is quantitative by using a survey-questionnaire method. Samples are the users of housing parks in the Greater Jakarta area. The unit of analysis is the household from a different level of income. The number of samples was determined using the Lemeshow formula of 96. The results show that the higher income the lower frequency, duration, and intensity of using parks with significant results. There is a contradiction between the provision and the utilization of parks. The better condition of the higher income housing park, the lower of its utilization. For the low-income with a limited area of his unit, they use parks more frequently, long and intensive. The more spacious residential space, the less frequent residents use housing parks because housing facilities are much better in accommodating the various activities of household members. It is necessary to consider the utilization behaviour of the residents in providing housing parks.

1. Introduction

Housing is a collection of houses that are equipped with public facilities as efforts to meet adequate housing conditions [1]. The growth rate of planned housing experiences significant numbers on a low-income community (LIC), middle-income community (MIC), and upper-income community (UIC). One of the public space facilities in housing provided by the developer is green open space (GOS), in the form of an active park to meet the needs of the residents.

It evident that the development of residential parks is often only focused on technical aspects and has not yet explored the elements of the characteristics of its user [2]. Between developers and residents, there are different perceptions of the actual interaction space needed [3]. Various occupational income groups affect the need for facilities, including parks in housing [4]. To optimize the utilization of residential parks, it is necessary to study the behaviour of park users based on various income groups.

Jabodetabek urban areas with the large national appeal are supported by rapid housing growth. This study aims to identify the behaviour patterns of residential park utilization based on income groups in the Jabodetabek area.

The quality of the housing environment can improve if there is an open space for residents to practice their activities or to interact with other residents [5]. Open space is provided to meet the needs



of human socialization [6]. The availability of this space helps residents to participate in the housing environment and create a sense of community acceptance [7]. Housing parks are open spaces that can be used directly by the residents to perform various activities [8]. Activities are anything done by humans or visible human behaviors [9]. Activities of residents in a residential park consist of ten variations including: sitting/relaxing and enjoying the green space, chatting with their neighbors, taking their children to play, practicing sports, walking, sunbathing, taking pictures, eating/drinking, perform community activities, and merchandising. Variation of activities can take place in a housing park because it is equipped with a variety of supporting facilities, such as seating area, lawns, sports fields, jogging tracks, playgrounds, swimming pools, stone reflection, and pavilions.

The behaviour pattern of residential parks utilization is a process of interaction between humans and space or the environment that involves motivation and individual needs as well as social needs [9]. Housing parks can be utilized as places to perform various preferable activity choices, for example, the users are able to choose to walk leisurely in the afternoon depends on environmental conditions such as weather [10]. Meanwhile, the condition of the area and the available facilities in the park are important factors to encourage community behaviour in utilizing the park [11].

Based on their income groups, the community is divided into LIC, MIC, and UIC. The characteristics of each group are as follows:

- Low Income Community (LIC) consists of people who possess limited buying power and require government assistance to obtain housings. This group earn IDR. 3,500,000 - IDR. 5,500,000/month [12].
- Middle Income Community (MIC) consists of people who are assumed to earn more than 1 to 6 times of LIC group. This grouping is referring to LIC buying power on housings based on [13]. This means that people on MIC group earn IDR 5,500,000 - IDR 33,000,000/month.
- Upper Income Community (UIC) consists of people who are assumed to earn more than 6 times of LIC. This means, the people on this group earn more than IDR 33,000,000/month.

2. Research methods

This study uses a quantitative approach. The unit of analysis in this study is the housing parks user households. The samples in this study were users of the Low-Income Society (LIC), the Middle-Income Society (MIC), and the High-Income Society (UIC) groups. The data collection method used is a questionnaire survey method. The time of research is April to May 2020.

In the questionnaire survey, the respondents involved were the people of the Jabodetabek area who utilize parks in the planned housing area. Because the number of residential green space users is unknown, it is assumed that $p=0.5$ or as much as 50% of them are residential green space users. For absolute precision, the researcher uses 10% ($d=0.10$) with a 95% confidence level and Z value at $1-\alpha/2$ confidence level with $\alpha=0.05$ is 1.96. Based on the results of calculations with the Lemeshow formula, the number of respondents examined in this study was 96.

Table 1. Housing park utilization behaviour.

Variable	Statements
Utilization Frequency	Frequency variable is aimed to identify how often the user utilize housing park. The more they utilize the park, the more influential the park is [2].
Utilization Duration	Duration shows the length of time used to perform various activities in park. The longer the duration, the higher the interest and comfort of the users to utilize park [14].
Activity Intensity	Activity intensity consists of variation of activities performed by the user in the park. The higher the activity intensity indicates that the higher the interest of the user on the park and the better the park is.. It means that the park has significant influence on them [14].

The questionnaire as a measurement tool is directed to obtain data on the frequency and duration of residential park use, as well as the intensity of activities, and also the identity and socio-economic background variables such as gender, age, total income, and area of housing units. Definitions and propositions related to the variable behaviour of housing park use are shown in Table 1.

3. Results and discussion

Based on the questionnaire results, the gender of residential park users from the LIC and MIC classes are mostly female, while the majority of users from UIC groups are male as shown in Table 2.

Table 2. Housing Park Utilization Characteristics

User Characteristics Variable		LIC Group	MIC Group	UIC Group
		(%)	(%)	(%)
Gender	Male	41	41	69
	Female	59	59	31
Age	< 19 years old	44	9	9
	19 - 45 years old	38	78	72
	46 - 65 years old	19	9	16
	> 65 years old	0	3	3
Area of Housing Unit	< 90 m ²	84	25	9
	90 m ² ≤ X < 300 m ²	16	75	56
	≥ 300 m ²	0	0	34

While in terms of age, LIC group users tend to be users of 45 years and under, while users from the MIC and UIC groups are aged between 19-45 years old. The average choice of area of housing unit distinguishes between income groups. LIC community occupancy ranges around a building area of less than 90 m², MIC group between 90 m²-300 m², and UIC groups ranging from 90 m² to more than 300m².

There are differences in patterns of park utilization behaviour on each income group with significant test results for all behaviour variables including utilization frequency, duration, and intensity. The significance value of the three variables can be seen in Table 3. The significance value of each variable is 0,000 or <0.005. This shows that there are significant differences in behaviour patterns of housing park use from the three income groups in Jabodetabek area.

Table 3. Statistical test of park utilization behaviour pattern of various income groups.

Income Groups	K Test Significance		
	Utilization Frequency	Utilization Duration	Activity Intensity
LIC	0.000	0.000	0.000
MIC	0.000	0.000	0.000
UIC	0.000	0.000	0.000

The frequency of housing park utilization is shown in Table 4. Low-income groups (LIC) utilizes a housing park with a higher intensity than the other two groups. Likewise, the LIC group tends to spend more time in the park than the MIC and UIC groups (Table 5).

Table 4. Housing park utilization frequency based on income groups.

Utilization Frequency	LIC Group (%)	MIC Group (%)	UIC Group (%)
< 1 time (rarely)	9	44	59
1 time	19	25	25
2 times	25	22	13
3 times	25	6	3
4 times	16	0	0
5 times and more	6	3	0
Total	100	100	100

Table 5. Housing park utilization duration based on income groups.

Utilization Duration	LIC Group (%)	MIC Group (%)	UIC Group (%)
< 1 Hour	13	31	25
1 Hour	28	50	59
2 Hour	41	19	16
3 Hour and more	19	0	0
Total	100	100	100

The intensity of activities in this study shows how many types of community activities that occur in housing parks. As seen in Table 6, the highest activity was found in the LIC community, followed by MIC and UIC groups. The higher the level of income, the lower the intensity of the activities carried out in the housing park area. This indicates that the intensity of park utilization is higher when the income is lower.

Table 6. Housing park activity intensity based on income groups.

Activity Intensity	LIC Group (%)	MIC Group (%)	UIC Group (%)
1 kind of activity	6	3	0
2 kinds of activity	3	9	19
3 kinds of activity	0	13	13
4 kinds of activity	9	13	19
5 kinds of activity	13	19	25
6 kinds of activity	13	19	9
7 kinds of activity	9	9	3
8 kinds of activity	22	3	13
9 kinds of activity and more	25	13	0
Total	100	100	101

Based on the analysis results, the LIC group possesses the highest park utilization behaviour pattern in terms of frequency, duration, and intensity of activity than the other two groups. This shows that parks are more often utilized by LIC. This relates to the area of housing units which is narrower than the other two groups.

The LIC groups generally utilize housing parks 2-4 times a week and tend to spend 2-3 hours of time. This is in parallel with the research results related to the LIC group that with their narrow area of housing units, most of them prefer to utilize shared spaces outside their houses, such as parks. If the park is closer to their house it can function as an extension of family activity space. This is evident from the various types of activities that are often carried out in the park by this group. The various

types of activities carried out in the park by the LIC group are chatting, playing with their children, sports, walking, sunbathing, eating/drinking, community activities and merchandising.

Park facilities that are often used by the LIC group are seating area, sports fields, and playground. This is in accordance with their activity choices practiced in the park. Complaints raised by the LIC group related to housing parks are the condition of the park's area which is often not well maintained and inadequate facilities. The utilization of the parks often contradicts the condition of the park itself. With the high utilization of residential parks by the LIC group, it is necessary to pay attention to the types of facilities in housing parks planning and the need for housing park management so these parks can be optimally utilized.

Low-income residents have a greater quantity of outdoor space needs compared to residents of middle and upper-income groups. This is influenced by the averagely smaller area of housing units inhabited by residents of LIC group. Poorly maintained park conditions and minimal availability of facilities tend to be found in LIC housing parks, even though the existence of parks in LIC housing groups has significant functions. Because of that, this is a matter that must be evaluated by housing developers to consider the users' characteristics and preferences to optimize the utilization of housing parks for people from each group.

The behaviour pattern of housing park utilization by the MIC group shows an almost similar tendency as the one found on the UIC group on the perspectives of activity frequency, duration, and intensity. This group can buy residential units wider than the LIC group. Park users from this group are generally women of productive age. This group tends to spend time in the housing park area for 1 hour, with a relatively low frequency of utilization. The types of activities that are often carried out in housing parks by the MIC group are less varied than the LIC group. Activities performed by the MIC group in the park consist of sitting/relaxing and enjoying the green space, chatting, taking children to play, sports, walking, and sunbathing. While the types of park facilities often used are seats and sports fields. From the description above, it appears that the wider area of housing units owned by the MIC group can facilitate family activities inside their housing area so that the utilization of outdoor space such as housing parks is not as intensive as the LIC group. Therefore, it is necessary to emphasize the relation between the provision of housing parks and the planned residential units. The larger the size of the housing unit will result in lower housing parks utilization by the residents.

The housing park utilization behaviour patterns of the UIC group show lower activity frequency, duration, and intensity. This is in contrary to the reality where housing parks provided by the residential developer that often provides larger types of facilities, higher maintainability, larger size and more secure parks for this group.

In terms of residential building area, this group occupies a much larger area of housing unit compared to the other two groups. This means their houses offer much better facilities to accommodate various family activities. There is a possible extensive influence of residential units on housing park utilization. UIC group tends to be less active and perform lower socialization in housing parks. Park users from the UIC group are dominated by male occupants of productive age. The duration of the activity in the park is 1 hour. The diversity of activities in the park is lower than the other two groups. The people in this group have 5 (five) variations of activities types in the park, namely sitting/relaxing and enjoying the green space, chatting, taking children to play, sports, and walking. The most utilized facility by this group is the jogging track.

4. Conclusion

There are differences in behaviour patterns of housing parks utilization by three groups of people based on their level of income with significant results. The higher the income group, the lower the frequency, duration, and intensity of activities performed in housing parks. This finding is contrary to the reality of housing parks provision. Based on the results of this study the planning and provision of housing parks should consider the users' characteristics and preferences to optimize the utilization of housing parks for each class of society. The same situation should be practiced in the management of

residential parks, it is necessary to pay attention to the design, area, maintenance level, security and availability of facilities diversity, so that needs of the residents accordingly.

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Housing parks utilization behaviour based on income group in Jabodetabek area

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Abstract. Housing parks are one of the shared facilities in planned housing. Its function is to support the quality of life and social sustainability. To create a sustainable housing park needs a pattern of utilization behaviour of its inhabitants. The aim of this study is to identify housing park utilization behaviour based on their level of income. This research is quantitative by using a survey-questionnaire method. Samples are the users of housing parks in the Greater Jakarta area. The unit of analysis is the household from a different level of income. The number of samples was determined using the Lemeshow formula of 96. The results show that the higher income the lower frequency, duration, and intensity of using parks with significant results. There is a contradiction between the provision and the utilization of parks. The better condition of the higher income housing park, the lower of its utilization. For the low-income with a limited area of his unit, they use parks more frequently, long and intensive. The more spacious residential space, the less frequent residents use housing parks because housing facilities are much better in accommodating the various activities of household members. It is necessary to consider the utilization behaviour of the residents in providing housing parks.

1. Introduction

Housing is a collection of houses that are equipped with public facilities as efforts to meet adequate housing conditions [1]. The growth rate of planned housing experiences significant numbers on a low-income community (LIC), middle-income community (MIC), and upper-income community (UIC). One of the public space facilities in housing provided by the developer is green open space (GOS), in the form of an active park to meet the needs of the residents.

It evident that the development of residential parks is often only focused on technical aspects and has not yet explored the elements of the characteristics of its user [2]. Between developers and residents, there are different perceptions of the actual interaction space needed [3]. Various occupational income groups affect the need for facilities, including parks in housing [4]. To optimize the utilization of residential parks, it is necessary to study the behaviour of park users based on various income groups.

Jabodetabek urban areas with the large national appeal are supported by rapid housing growth. This study aims to identify the behaviour patterns of residential park utilization based on income groups in the Jabodetabek area.

The quality of the housing environment can improve if there is an open space for residents to practice their activities or to interact with other residents [5]. Open space is provided to meet the needs



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of human socialization [6]. The availability of this space helps residents to participate in the housing environment and create a sense of community acceptance [7]. Housing parks are open spaces that can be used directly by the residents to perform various activities [8]. Activities are anything done by humans or visible human behaviors [9]. Activities of residents in a residential park consist of ten variations including: sitting/relaxing and enjoying the green space, chatting with their neighbors, taking their children to play, practicing sports, walking, sunbathing, taking pictures, eating/drinking, perform community activities, and merchandising. Variation of activities can take place in a housing park because it is equipped with a variety of supporting facilities, such as seating area, lawns, sports fields, jogging tracks, playgrounds, swimming pools, stone reflection, and pavilions.

The behaviour pattern of residential parks utilization is a process of interaction between humans and space or the environment that involves motivation and individual needs as well as social needs [9]. Housing parks can be utilized as places to perform various preferable activity choices, for example, the users are able to choose to walk leisurely in the afternoon depends on environmental conditions such as weather [10]. Meanwhile, the condition of the area and the available facilities in the park are important factors to encourage community behaviour in utilizing the park [11].

Based on their income groups, the community is divided into LIC, MIC, and UIC. The characteristics of each group are as follows:

- Low Income Community (LIC) consists of people who possess limited buying power and require government assistance to obtain housings. This group earn IDR. 3,500,000 - IDR. 5,500,000/month [12].
- Middle Income Community (MIC) consists of people who are assumed to earn more than 1 to 6 times of LIC group. This grouping is referring to LIC buying power on housings based on [13]. This means that people on MIC group earn IDR 5,500,000 - IDR 33,000,000/month.
- Upper Income Community (UIC) consists of people who are assumed to earn more than 6 times of LIC. This means, the people on this group earn more than IDR 33,000,000/month.

2. Research methods

This study uses a quantitative approach. The unit of analysis in this study is the housing parks user households. The samples in this study were users of the Low-Income Society (LIC), the Middle-Income Society (MIC), and the High-Income Society (UIC) groups. The data collection method used is a questionnaire survey method. The time of research is April to May 2020.

In the questionnaire survey, the respondents involved were the people of the Jabodetabek area who utilize parks in the planned housing area. Because the number of residential green space users is unknown, it is assumed that $p=0.5$ or as much as 50% of them are residential green space users. For absolute precision, the researcher uses 10% ($d=0.10$) with a 95% confidence level and Z value at $1-\alpha/2$ confidence level with $\alpha=0.05$ is 1.96. Based on the results of calculations with the Lemeshow formula, the number of respondents examined in this study was 96.

Table 1. Housing park utilization behaviour.

Variable	Statements
Utilization Frequency	Frequency variable is aimed to identify how often the user utilize housing park. The more they utilize the park, the more influential the park is [2].
Utilization Duration	Duration shows the length of time used to perform various activities in park. The longer the duration, the higher the interest and comfort of the users to utilize park [14].
Activity Intensity	Activity intensity consists of variation of activities performed by the user in the park. The higher the activity intensity indicates that the higher the interest of the user on the park and the better the park is.. It means that the park has significant influence on them [14].

The questionnaire as a measurement tool is directed to obtain data on the frequency and duration of residential park use, as well as the intensity of activities, and also the identity and socio-economic background variables such as gender, age, total income, and area of housing units. Definitions and propositions related to the variable behaviour of housing park use are shown in Table 1.

3. Results and discussion

Based on the questionnaire results, the gender of residential park users from the LIC and MIC classes are mostly female, while the majority of users from UIC groups are male as shown in Table 2.

Table 2. Housing Park Utilization Characteristics

User Characteristics Variable		LIC Group (%)	MIC Group (%)	UIC Group (%)
Gender	Male	41	41	69
	Female	59	59	31
Age	< 19 years old	44	9	9
	19 - 45 years old	38	78	72
	46 - 65 years old	19	9	16
	> 65 years old	0	3	3
Area of Housing Unit	< 90 m ²	84	25	9
	90 m ² ≤ X < 300 m ²	16	75	56
	≥ 300 m ²	0	0	34

While in terms of age, LIC group users tend to be users of 45 years and under, while users from the MIC and UIC groups are aged between 19-45 years old. The average choice of area of housing unit distinguishes between income groups. LIC community occupancy ranges around a building area of less than 90 m², MIC group between 90 m²-300 m², and UIC groups ranging from 90 m² to more than 300m².

There are differences in patterns of park utilization behaviour on each income group with significant test results for all behaviour variables including utilization frequency, duration, and intensity. The significance value of the three variables can be seen in Table 3. The significance value of each variable is 0,000 or <0.005. This shows that there are significant differences in behaviour patterns of housing park use from the three income groups in Jabodetabek area.

Table 3. Statistical test of park utilization behaviour pattern of various income groups.

Income Groups	K Test Significance		
	Utilization Frequency	Utilization Duration	Activity Intensity
LIC	0.000	0.000	0.000
MIC	0.000	0.000	0.000
UIC	0.000	0.000	0.000

The frequency of housing park utilization is shown in Table 4. Low-income groups (LIC) utilizes a housing park with a higher intensity than the other two groups. Likewise, the LIC group tends to spend more time in the park than the MIC and UIC groups (Table 5).

Table 4. Housing park utilization frequency based on income groups.

Utilization Frequency	LIC Group (%)	MIC Group (%)	UIC Group (%)
< 1 time (rarely)	9	44	59
1 time	19	25	25
2 times	25	22	13
3 times	25	6	3
4 times	16	0	0
5 times and more	6	3	0
Total	100	100	100

Table 5. Housing park utilization duration based on income groups.

Utilization Duration	LIC Group (%)	MIC Group (%)	UIC Group (%)
< 1 Hour	13	31	25
1 Hour	28	50	59
2 Hour	41	19	16
3 Hour and more	19	0	0
Total	100	100	100

The intensity of activities in this study shows how many types of community activities that occur in housing parks. As seen in Table 6, the highest activity was found in the LIC community, followed by MIC and UIC groups. The higher the level of income, the lower the intensity of the activities carried out in the housing park area. This indicates that the intensity of park utilization is higher when the income is lower.

Table 6. Housing park activity intensity based on income groups.

Activity Intensity	LIC Group (%)	MIC Group (%)	UIC Group (%)
1 kind of activity	6	3	0
2 kinds of activity	3	9	19
3 kinds of activity	0	13	13
4 kinds of activity	9	13	19
5 kinds of activity	13	19	25
6 kinds of activity	13	19	9
7 kinds of activity	9	9	3
8 kinds of activity	22	3	13
9 kinds of activity and more	25	13	0
Total	100	100	101

Based on the analysis results, the LIC group possesses the highest park utilization behaviour pattern in terms of frequency, duration, and intensity of activity than the other two groups. This shows that parks are more often utilized by LIC. This relates to the area of housing units which is narrower than the other two groups.

The LIC groups generally utilize housing parks 2-4 times a week and tend to spend 2-3 hours of time. This is in parallel with the research results related to the LIC group that with their narrow area of housing units, most of them prefer to utilize shared spaces outside their houses, such as parks. If the park is closer to their house it can function as an extension of family activity space. This is evident from the various types of activities that are often carried out in the park by this group. The various

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types of activities carried out in the park by the LIC group are chatting, playing with their children, sports, walking, sunbathing, eating/drinking, community activities and merchandising.

Park facilities that are often used by the LIC group are seating area, sports fields, and playground. This is in accordance with their activity choices practiced in the park. Complaints raised by the LIC group related to housing parks are the condition of the park's area which is often not well maintained and inadequate facilities. The utilization of the parks often contradicts the condition of the park itself. With the high utilization of residential parks by the LIC group, it is necessary to pay attention to the types of facilities in housing parks planning and the need for housing park management so these parks can be optimally utilized.

Low-income residents have a greater quantity of outdoor space needs compared to residents of middle and upper-income groups. This is influenced by the averagely smaller area of housing units inhabited by residents of LIC group. Poorly maintained park conditions and minimal availability of facilities tend to be found in LIC housing parks, even though the existence of parks in LIC housing groups has significant functions. Because of that, this is a matter that must be evaluated by housing developers to consider the users' characteristics and preferences to optimize the utilization of housing parks for people from each group.

The behaviour pattern of housing park utilization by the MIC group shows an almost similar tendency as the one found on the UIC group on the perspectives of activity frequency, duration, and intensity. This group can buy residential units wider than the LIC group. Park users from this group are generally women of productive age. This group tends to spend time in the housing park area for 1 hour, with a relatively low frequency of utilization. The types of activities that are often carried out in housing parks by the MIC group are less varied than the LIC group. Activities performed by the MIC group in the park consist of sitting/relaxing and enjoying the green space, chatting, taking children to play, sports, walking, and sunbathing. While the types of park facilities often used are seats and sports fields. From the description above, it appears that the wider area of housing units owned by the MIC group can facilitate family activities inside their housing area so that the utilization of outdoor space such as housing parks is not as intensive as the LIC group. Therefore, it is necessary to emphasize the relation between the provision of housing parks and the planned residential units. The larger the size of the housing unit will result in lower housing parks utilization by the residents.

The housing park utilization behaviour patterns of the UIC group show lower activity frequency, duration, and intensity. This is in contrary to the reality where housing parks provided by the residential developer that often provides larger types of facilities, higher maintainability, larger size and more secure parks for this group.

In terms of residential building area, this group occupies a much larger area of housing unit compared to the other two groups. This means their houses offer much better facilities to accommodate various family activities. There is a possible extensive influence of residential units on housing park utilization. UIC group tends to be less active and perform lower socialization in housing parks. Park users from the UIC group are dominated by male occupants of productive age. The duration of the activity in the park is 1 hour. The diversity of activities in the park is lower than the other two groups. The people in this group have 5 (five) variations of activities types in the park, namely sitting/relaxing and enjoying the green space, chatting, taking children to play, sports, and walking. The most utilized facility by this group is the jogging track.

4. Conclusion

There are differences in behaviour patterns of housing parks utilization by three groups of people based on their level of income with significant results. The higher the income group, the lower the frequency, duration, and intensity of activities performed in housing parks. This finding is contrary to the reality of housing parks provision. Based on the results of this study the planning and provision of housing parks should consider the users' characteristics and preferences to optimize the utilization of housing parks for each class of society. The same situation should be practiced in the management of

residential parks, it is necessary to pay attention to the design, area, maintenance level, security and availability of facilities diversity, so that needs of the residents accordingly.

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