



PLANNING MALAYSIA:

Journal of the Malaysian Institute of Planners

VOLUME 23 ISSUE 6 (2025), Page 857 – 873

POST-OCCUPANCY EVALUATION OF COMMUNAL SPACES: USAGE PATTERNS AND RESIDENT SATISFACTION IN THREE LOW-COST FLATS

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Abstract

Low-cost flats in Malaysia provide only minimal communal facilities, with likely impacts daily life and satisfaction. Despite their importance to residents' social interaction and well-being, few studies assess how specific communal spaces of the low-cost flats are used and rated. This paper evaluates usage and residents' satisfaction across three low-cost flats. A mixed-method design was used. First, semi-structured interviews with the Joint Management Body (JMB) identified various communal spaces and their typical uses. Survey with residents then measured frequency of use and satisfaction of the communal spaces. Descriptive statistics and cross-comparisons classified spaces into high/low use and high/low satisfaction categories. Findings suggest that everyday community life is anchored in informal (emergent), unscheduled areas. Open yards, corridors, and parking are heavily used for casual play and socialising. Where provided, formal communal space (programmed) such as multipurpose hall and surau achieve the strongest combination of use and satisfaction. With flat without an indoor hall, the parking lot became the default gathering space resulting to high use but low satisfaction due to heat, limited seating, and safety concerns. High-use/low-satisfaction spaces emerged as priority future improvements. Low-cost, basic upgrades matter, ensure at least one dedicated indoor communal room and humanise informal outdoor areas with shade, seating, lighting, and maintenance. It implies that combining management insights with resident feedback offers a practical framework to target optimal improvements and guide more liveable, inclusive communal environments in low-cost housing.

Keywords: Communal space, Shared space, Resident satisfaction, Low-cost housing, Quality housing environment

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INTRODUCTION

Rapid urbanisation is reshaping Malaysian cities. In Fourth Industrial Revolution, Malaysia is one of the fastest in economic development, in line with the population increase especially in urban areas. Affordable and low-cost housings are in demand for lower income citizens. Low-cost housing is affordable housing for the section of society whose income is below the median household earning (Abdul Hadi, 2019; Liu & Ong, 2021). Malaysia's low-cost housing provision is anchored by the Program Perumahan Rakyat (PPR), launched under the First Malaysia Plan to resettle squatter communities and deliver affordable flats (Srirangam et al., 2022). These compact high-rises (typically ≤ 700 ft² per unit) follow minimal amenity standards—hall, *surau*, kindergarten, playground, parking, refuse house set by state guidelines (JPBD, 2016). For example, in Selangor, low-cost housing options include PR4 (Low/Medium/Medium Apartment Houses), PR5 (Selangorku), and PR6 (Independent Price) flats.

While meeting urgent housing needs of urban residents, limited outdoor spaces have sacrificed the communal quality of the housing areas, as tight budgets and limited land yield bare bones, overcrowded shared spaces (Kuok et al., 2025). Nonetheless, residents in low-cost housing most definitely require more spaces that can fulfil their individual, recreational, social and community needs, which they can call their own. Communal space is the lever to close this limited space gap. These semi-public in-between areas when accessible, comfortable, and well maintained, strengthen neighbourly ties, improve well-being, and lift the flat's visual character (Amirjani et al., 2025; Wu & Ge, 2020; Fu et al., 2015; Zhu, 2015). Research evidence shows various impacts to wellbeing due to limited outdoor spaces in residential housings. For example, children show more play activities in spaces that are visible from home and supervised. Routine failures such as poor maintenance, cluttered corridors, unsafe playgrounds, limited accessibility signal the need for substantial upgrades and tighter management (Srirangam et al., 2022). Inadequate outdoor facilities and overcrowding reduce children's play, lower physical activity, and decrease overall satisfaction (Hanapi & Ahmad, 2016; Karim, 2012). National health data from the National Health and Morbidity Survey (NMSH) reported high obesity and noncommunicable diseases (NCD) burdens, with 9.2% of B40 children in experiencing mental-health challenges (Ministry of Health, 2019; 2023). Weak communal settings also suppress neighbourly interaction. High-rise residents often do not recognise each other, which erode social trust and natural surveillance and undermining National Housing Policy goals (NHP, 2019).

The housing management authority and the residents' feedback are therefore essential. Malaysian studies directly linking communal space typologies and programming to resident-level satisfaction remain sparse. Recent work skews to overall satisfaction, design systems, or broad low-cost housing

effects rather than shared-space use (e.g. studies by Alias et al., 2025; Kuok et al., 2025; Srirangam et al., 2022; Ishak et al., 2016). To narrow this gap, this research applied two objectives: 1) Quantify participation frequency and satisfaction of spaces defined by the Joint Management Body (JMB) in each flat, and 2) Prioritise actions by classifying spaces into high-use/high-satisfaction, high-use/low-satisfaction, low-use/high-satisfaction, and low-use/low-satisfaction groups, and recommend targeted, low-cost, code-compliant improvements for each flat. This is to evaluate the performance and satisfaction of communal spaces in three low-cost flats by integrating JMB's provision data with residents' usage and satisfaction and identify optimal spaces and low-cost modification.

LITERATURE REVIEW

Definition and Function of Communal Spaces in Low-Cost Housing

Basic outdoor facilities in low-cost housings as defined in planning guidelines/standards are common structures including a community hall, *surau*, food stall, and kindergarten (JPBD, 2016). Formal open spaces are the playground, play courts and parking space. Others that are not stated are the informal spaces such as in between flats, entrances, lift lobby, and along walkways and corridors. The green areas are most often left-over spaces for buffer zones, and plantings parameters. Communal spaces in residential flats are most often both the formal and the informal spaces shared by the community. These include indoor lobbies, corridors, stairwells, lifts, parking and passages, plus outdoor/semi-outdoor courtyards, gardens, rooftops and ground-level interfaces (Wu & Ge, 2020). The communal spaces also include any commonly owned facility from a small sitting corner or playground to a multipurpose hall. These settings anchor daily life, hosting neighbourly encounters, children's play, family relaxation and community events, and accommodating shared amenities such as laundry rooms and *surau*. Overall, minimum provisions in Malaysia's PPR or low-cost housing schemes include open spaces, playgrounds, *surau*, food stalls, kindergartens and refuse facilities, underscoring their role in high-density liveability (Alias et al., 2025).

Communal spaces operate as third places, where routine encounters weave social ties beyond what formal governance can deliver. Observational studies in Australia and Vietnam find that residents who frequent landscaped courtyards or roof gardens report stronger neighbourhood attachment and lower loneliness, while non-users feel detached and unsafe (Kleeman et al., 2023; Nguyen et al., 2024). Malaysian evidence aligns with international studies: the absence of quality green commons in Program Perumahan Rakyat (PPR) flats is associated with weaker collective efficacy and higher perceived crime (Harun et al., 2023). Outdoor housing environment and landscaped spaces are therefore

pivotal. Flexible, green indoor–outdoor nodes encourage lingering, multigenerational play, and casual gatherings, strengthening social ties and natural surveillance (Nguyen et al., 2024; Omar, 2008).

Shade trees and seating nooks along footpaths encourage people to walk and use the stairs instead of relying on lifts or cars. Planted edges around sports courts reduce noise and heat, allowing the spaces to be used for longer hours. A study survey in Sarawak found that flats offering green courtyards and children’s play lawns scored significantly higher on overall housing satisfaction even when the built units were identical, highlighting the multiplier effect of communal space on perceived quality of life (Kuok et al., 2025). When maintenance is neglected or access is poor, people stop using the space. Satisfaction drops even if open-space quotas are met. This shows that providing space alone is not enough without user-centred management.

Programmed and Emergent Activities in Communal Spaces

Planned communal activity hinges on facility provision and active management. Although low-cost housing standards list a multipurpose hall, playground, *surau* and open space as programmed spaces, these venues are often too small and too few, producing chronic overcrowding (Abdullah et al., 2025). Resident feedback shows broad dissatisfaction, signalling that on-paper provision rarely matches lived demand (Ismail et al., 2019). In some residential blocks, a nominal recreation area is effectively monopolised by adults, thus displacing children, where housing is equipped with only a single small hall or pocket playground (Abdullah et al., 2025). Spatial constraints limit what can be formally programmed. This restriction exists from the very beginning.

Despite the availability of decent facilities, the quality of housing management largely determines their overall impact. Where JMBs or local authorities keep spaces open, maintained and actively programmed, social networks and stewardship improve (Harun et al., 2024). While community gardens and *gotong-royong* promote collective use, many low-cost housing areas do not have enough resources. This highlights a gap between what policies promise and what happens in practice, as residents end up carrying the responsibility. Residents often self-organise and appropriate shared areas for daily needs. In Malaysian high-rises, spaces such as corridors, landings, lobbies, and courtyards become extensions of the home. A lack of amenities encourages residents to use informal and adaptable areas, which then evolve into emergent spaces. They include leftover areas such as hallways and stairwells, leading to more noise, blockage, and fire hazards, and less privacy (Nguyen et al., 2024). Where drying yards are inadequate, clotheslines and potted plants spill into corridors, creating maintenance conflicts in spaces not designed for such use (Goh & Ahmad, 2011). As such, emergent adaptations can enhance liveability

when tolerated but can also pose issues to the community. For example, in Shah Alam low-cost flat, a resident-funded *wakaf* becomes a valued social node that enhanced liveability and community well-being (Karim, 2012). The implication is clear, that is resident-led micro-interventions can close outdoor design gaps, but it will remain fragile and with challenges without official support, accommodating layouts and management administration (Karim, 2012).

RESEARCH METHODOLOGY

Case Study Sites

The study sites are low-cost flats located in Selayang, Gombak, and Ulu Klang in Gombak district (Figure 1). The sites were selected based on information obtained from Majlis Perbandaran Selayang (MPS) and Majlis Perbandaran Ampang Jaya (MPAJ) on easy cooperation by the JMBs and the residents of each housing flat.



Figure 15: Case study sites in Gombak district
Source: Authors; Adapted from Google map

Pangsapuri Kenanga

Pangsapuri Kenanga is a leasehold low-cost flat in Batu Caves, Selangor, comprising of 297 compact three-bedroom units (~650–775 sq ft) on an 8,340.09 m² site surrounded by buildings (<https://www.iproperty.com.my>). The amenities are basic: a *surau*, open parking with some covered bays, and 24/7 security. Geared to B40 small families and first-time owners, the flats sit near schools and shops with strong connectivity to Kuala Lumpur (public transport, Duta-Ulu Kelang Expressway-DUKE, Middle Ring Road 2-MRR2). It occupies a transitional zone between Kuala Lumpur's metropolitan core and the suburban areas of Selangor. Communal life concentrates at the playground and ground-

level open spaces, which substitute for private yards. Figure 2 shows the site and its context.

Pangsapuri Sri Impian

Sri Impian is a low-cost, five-storey walk-up flat in Ukay Perdana, Ampang, with roughly 750 units. Typical units are about 650 sq ft (3 bedrooms, 1 bathroom). On its 18,457.57 m² site surrounded by buildings and an extensive green area, facilities include several small playgrounds/open areas, a *surau*, and common parking. There are an informal resting area and a badminton court, but underuse due to limited seating and shade. Located near a Giant supermarket, schools, and a local college, the flat typifies 1990s–2000s PPR stock—medium-rise, high-density (<https://jmbmalaysia.org/>) where targeted upgrades to courtyards and corridors could substantially improve daily experience. Figure 2 shows the site and its context.

Pangsapuri Selayang Mulia

It is also referred as PPR Selayang Mulia. This low-cost flat in Selayang comprises of two 17-storey blocks, Mawar and Teratai, with lift access, which is a notable upgrade over older walk-ups. House units are about 650 sq ft (3 bedrooms, 2 baths), set on a 33,414.16 m² site (<https://jmbmalaysia.org/>). On-site amenities are basic but essential such as open-air parking, a children's playground, a play court, small stalls, and the lifts. The site setting is urban, whereby it is close to shops, schools, and clinics. The site is surrounded by large undulating green area (Figure 2). As a newer high-rise form of public housing designed to optimise limited land, its communal spaces are essential to residents' daily liveability.



Figure 2: Drone aerial views of Kenanga (left), Sri Impian walk-up flat (middle) and Selayang Mulia (right)

Source: Authors

Data Collection

Post-occupancy evaluation (POE) was used to obtain data. POE is an evaluation that is commonly used in the built environment and architectural studies to

provide user feedback. POE usually involves feedback from the occupants, through questionnaires, interviews, and workshops (Jiboye, 2012). It has been conducted in various types of research related to facilities including schools, universities, hospitals, landscape/civil works, learning environments and housing.

A preliminary site observation and drone images across all three flats produced a definitive spatial survey and inventory of their communal spaces. Systematic walk-throughs covered every block and ground-level exterior, recording type, location, and key attributes. Each feature was photographed, logged on a standard pro-forma and coded into a shared typology. Where floor plan of the flats existed, entries were cross-checked to prevent double counting and harmonise labels. This field inventory then anchored the JMB's interviews and filtered the residents' questionnaire.

Semi-structured interviews with one JMB representative per case study site captured management perspectives on provision and use. A flexible guide steered discussion toward space types and hosted activities. Interview sessions (30–60 minutes) were held on site, and included detailed note taking and, in some instances, audio recording with consent. The interviews included probing for concrete examples and recommendations, which produced a nuanced view of day-to-day communal-space operations.

The survey questionnaires to the residents yielded 401 valid responses: 150 from Selayang Mulia (37%), 139 from Kenanga (35%), and 112 from Sri Impian (28%). For a population of several thousand households, 400 cases typically deliver about $\pm 5\%$ margin of error at 95% confidence, and 300–400 respondents are generally adequate for reliable descriptive work (using Cochran's formula). The sample is therefore sufficient for generalisation and basic subgroup comparisons. Fieldwork proceeded smoothly with limited refusals. Non-contacts were replaced via random substitution per floor level. All questionnaires have undergone complete checks in the field, and again at data entry. Inconsistent records were removed or corrected, yielding the 401 cases analysed.

Data Analysis

Data were analysed descriptively for an exploratory, cross-comparison of the three case study sites. The analysis is recorded in three stages: Stage 1 consists of systematic site observations that produced a shared inventory of communal-space types, tagged with/without greenery. Stage 2 was semi-structured interviews with the JMB representatives, who confirmed space types and on-site activities, which harmonised labels across three housing flats. Stage 3 consists of resident questionnaires that limit to the JMB-confirmed inventory. They captured participation/frequency, activity uptake, and satisfaction. Limiting the survey to verified spaces ensured construct validity and contextual relevance, avoided

responses about non-existent facilities, and enabled a direct, actionable comparison between resident use and satisfaction and the facilities provided by management. The outputs consisted of tables and figures highlighting well-performing matches, underutilised facilities, and resident-driven activity hotspots. Table 1 summarises scope and descriptions of the research methodology. Figure 3 shows the summary of data collection and analysis processes.

Table 1: Scope and descriptions

Scope	Description
Typology setup	From site observation, compile the master list of common communal-space types. Code each space as with greenery or without greenery.
JMB inventory	Transcribe JMB interviews per flat to establish: (i) spaces available/operable, (ii) activities organised or occurring.
QS filter to JMB list	Filter the resident questionnaire to only the JMB-identified spaces/activities. Exclude any QS items that are not in the JMB inventory to keep the analysis aligned with management-defined provision.
Satisfaction profiling	Compute satisfaction distributions for the same spaces/activities. Visualise with stacked bars for quick comparison.
Alignment test: JMB vs residents	Crosstab JMB provided/programmed vs resident used/satisfied to flag: Matches high-use, high-satisfaction, high-use, low-satisfaction, low-use, high-satisfaction, low-use, low-satisfaction
Best-fit identification	Using a simple rule, nominate the most suitable communal space per flat and overall.
Targeted modifications	For underperforming but important spaces, specify typical, low-cost upgrades linked to observed issues.

Source: Authors

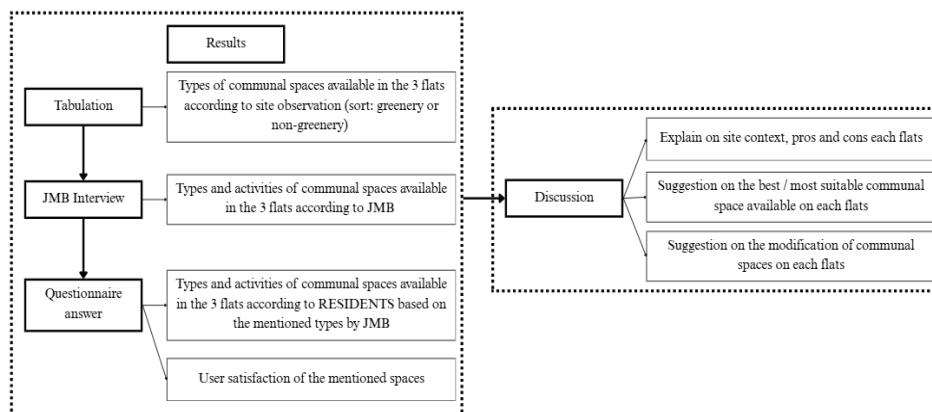


Figure 3: Data collection and analysis process

Source: Authors

ANALYSIS AND DISCUSSION

Table 2 presents the three flats, Kenanga, Sri Impian, and Selayang Mulia by listing their common communal space locations and classifying each as with greenery or without greenery. All three flats share a basic green core, which is an open green space plus a community garden.

Table 19: Common communal spaces across the three flats

Kenanga		Sri Impian		Selayang Mulia	
Greenery	Without Greenery	Greenery	Without Greenery	Greenery	Without Greenery
Open green spaces	Surau area	Open green spaces	Playground	Open green spaces	Playground
Community garden	Community hall	Community garden	Play court	Community garden	Play court
	Parking area		Community hall		Community hall
	Shaded area (sheltered by roof)		Open spaces		Surau area
	Seating area		Parking area		Open spaces
	Front yard and backyard of the flats		Shaded area		Parking area
	Playground		Seating area		Seating area
			Pedestrian walkways		Pedestrian walkways
					Front yard and backyard of the flats

Source: Authors



Figure 4: Community hall in Kenanga – (left), *wakaf rukun tetangga* in Sri Impian (middle) and Selayang Mulia (right)

Source: Authors

Green spaces are rare features across the three low-cost flats, highlighting a lack of provision for communal greenery. Each flat provides a

small lawn/field and a modest community garden, but scale and numbers are limited. Hardscaped provision dominates: *surau* or multipurpose rooms and a single court/playground are standard, matching Malaysia's bare minimum provision for low-cost housing development (5-10% for public facilities reserve and open space). Kenanga, Sri Impian, and Selayang Mulia all fit this template. One or two green amenities were identified amid extensive concrete infrastructure. Community gardens help, but land constraints push open space into residual corners. Unfortunately, greenery or nature plays a minor supporting role while daily life unfolds on hard surfaces.

Interview

The semi-structured interviews with JMB representatives identified various communal spaces in each flat and described their typical usage and users. Table 3 summarises the communal spaces, typical user groups, activities and the status of the spaces in Kenanga, Sri Impian, and Selayang Mulia, as reported by the JMB representatives.

Table 3: Communal spaces identified by JMB across three flats

Flats	Communal space	Typical users	Activities	Programmed or emergent
Kenanga	Front yard and backyard of the flats	Children	Playing (free play, running around)	Emergent
	Playground	Children	Play; adults supervise and chat informally	Programmed
	Open green spaces	Teenagers	Playing sports/games informally	Emergent
	<i>Surau</i> & community hall	All residents	Community activities and events	Programmed
Sri Impian	Playground	Children	Play; adults supervise and chat informally	Programmed
	Small court	Children and adults	Play space and badminton	Programmed
	Seating area & <i>wakaf</i>	All residents	Informal gathering and chatting	Emergent
	Parking area	All residents	Occasional community events	Programmed
Selayang Mulia	Community hall	All residents	Planned community functions	Programmed
	<i>Wakaf rukun tetangga</i>	All residents	Community functions; children's activities	Emergent
	Play court	Teenagers	Sports and games	Emergent

Flats	Communal space	Typical users	Activities	Programmed or emergent
	Playground	Children	Play (children); adults accompany and socialize	Programmed

Source: Authors

Across all three flats, communal use is dominated by emergent spaces, and everyday activities are largely informal. Spontaneous play, teen hangouts, and adult chatting fill semi-public open spaces, patches of green, and corridors. Only one or two spots in each flat are set aside for scheduled or programmed events. Kenanga relies on its *surau* and hall, Sri Impian converts a parking lot, and Selayang Mulia uses a built community hall. Formal functions are infrequent and supported by a thin, multi-use infrastructure. Differences are clearest in youth sport. Selayang Mulia has a dedicated court that attracts teens, Kenanga does not have a play court but only a small space for playground, and youths have to improvise in open areas. Sri Impian offers only a small playground and court. Social patterns vary too. The front yard and backyard of Kenanga flats skews to children, while Sri Impian and Selayang Mulia's playgrounds and seating areas foster mixed, intergenerational use. Overall, all three flats depend on informal in-between spaces to meet day-to-day social and recreational needs.

The differences observed, for example on the presence of a formal sports court in Selayang Mulia versus its absence in Kenanga. It shows that available infrastructure can shape where certain activities concentrate. Yet, the underlying reliance on informal, ad-hoc spaces is a common denominator across these communities. Ultimately, these flats depend on a modest platform of formal facilities sustained by a much richer tapestry of informal communal spaces, together supporting the social and recreational needs of their low-income resident populations.

Questionnaire

Questionnaire survey captured residents' perspectives for each JMB-verified communal space/activity, the usage and how satisfied they are. Figure 5 and Figure 6 summarise the flat-level distributions of frequency and satisfaction for Kenanga, Sri Impian, and Selayang Mulia.

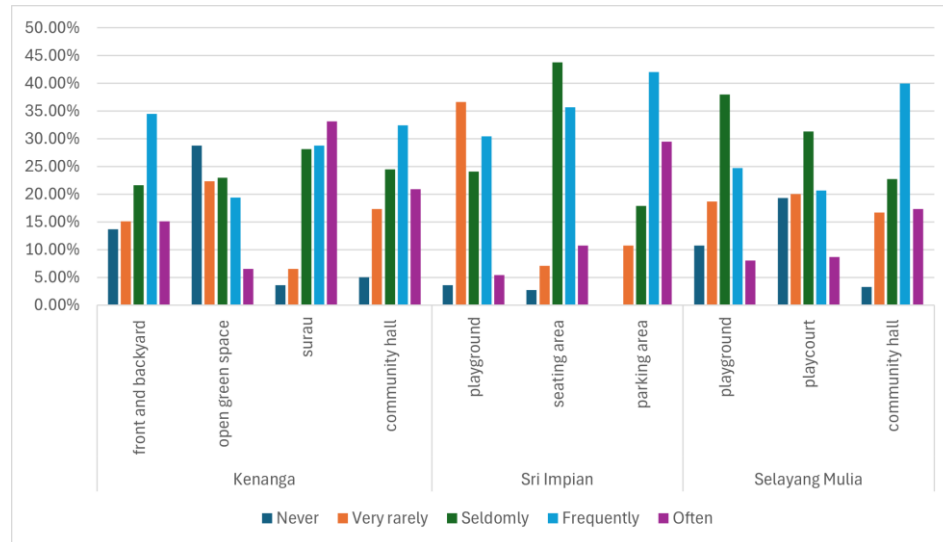


Figure 5: Frequency of communal space usage for each flat
 Source: Authors

Kenanga's activity clusters in a few core spaces, reflecting its thin formal offer. *Surau* is the busiest (62% frequent/often), with the multipurpose hall close behind (53%). The open green is the idlest—it is very limited. Over half responded seldom or never use it (28.8% never; 22.3% rarely). Front/back yards see moderate-high use as play and casual socialising spill into these informal zones in the absence of courts or playgrounds.

At Sri Impian, a hardscaped area anchors daily voluntary activities. The open parking lot is the genuine social hub with nearly three-quarters responded frequent/often. The playground draws only about one-third on a frequent/often basis, while seating areas sit at the middle (46% regular users). In essence, the car park doubles as a versatile gathering space, the playground is moderately used, and seating serves a steady subset.

Selayang Mulia shows a split pattern, which are a highly active indoor hub and selective outdoor use. The hall dominates (57% frequent/often), anchoring meetings and events. Outdoor play caters to niches activities. About one-third respondents use the playground and a similar share the court, while 19% never use the court. Everyday activity is hall centred. However, the play spaces remain valuable but less broadly used.

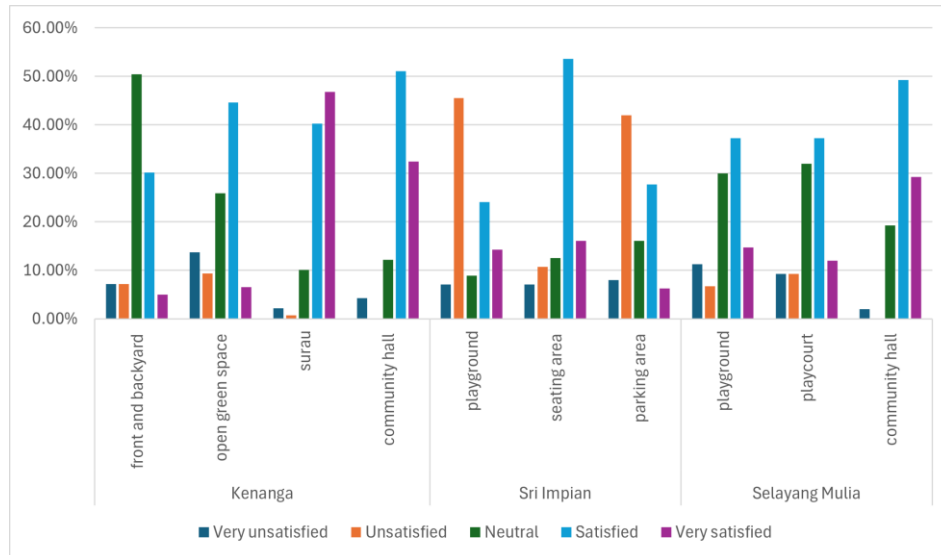


Figure 6: Satisfaction of communal space for each flat
Source: Authors

Kenanga's satisfaction mirrors its use patterns. Formal facilities perform best, the *surau* records 87% satisfied/very satisfied and the community hall 83%, reflecting strong fit for prayer, meetings, and events. However, informal outdoor communal areas lag. Only about one-third are satisfied with the front/back yard, while over half are neutral. Residents use it out of necessity, not comfort. The open green spaces, similarly, >23% dissatisfied and fewer than half are satisfied. As a result, a few well-loved formal venues, alongside heavily used but underwhelming improvised spaces give indication to upgrade outdoor yards and the green area. This is necessary if everyday satisfaction wanted to match usage.

Sri Impian's satisfaction profile is uneven. The simple seating areas perform best. About 70% of users are satisfied and very satisfied, showing that basic, comfortable places to sit meet usage expectation. At the opposite end, the playground scores worst, with over 52% dissatisfied, pointing to poor maintenance, inadequate equipment, or weak appeal to families. The parking area is the biggest mismatch. It sees heavy use but leaves roughly half of users unhappy, suggesting it functions as a social spillover space out of necessity rather than preference. It is deficits in shade, safety, and comfort. Ultimately, seating shows use and satisfaction alignment, while the playground and parking show divergence. Thus, priorities for future are clear, that is upgrading the playground and humanise the parking area, while preserving and modestly enhancing the already-valued seating provision.

Selayang Mulia shows strong use–satisfaction alignment. The multipurpose hall leads on both fronts, nearly four in five residents are satisfied and very satisfied, indicating a well-run, well-sized, and valuable communal hub. Outdoor facilities also rate solidly with their users, the playground draws mostly positive feedback (50%+ satisfied, 18% dissatisfied). The play court, while the lowest rated still posts about 49% satisfied versus 19% dissatisfied. No space exhibits a serious usage–satisfaction gap. The hall anchors everyday community life, and the playground and court adequately serve their target groups, pointing to communal infrastructure that is functioning as intended.

Across the three flats, formal indoor multi-purpose spaces, community halls and *surau* consistently lead on both use and residents’ approval. Table 4 places both in the high-use/high-satisfaction quadrant, about 58% use the *surau* frequently with 73% satisfied, while the hall records 50% frequent use and 75% satisfaction. With a purpose-built for gatherings, these venues reliably anchor communal life of the residents. Hence, a flexible indoor room whether a hall or a well-equipped *surau* that doubles as a meeting space is the most broadly effective communal provision across the flats.

Table 4: Crosstab JMB provided communal space vs resident used/satisfied

Quadrant (Use x Satisfaction)	Communal space	Use (Freq+Often)	Satisfaction (Sat+Very sat)
High-Use, High-Satisfaction	<i>Surau</i>	58.1%	72.6%
	Community hall	49.6%	74.6%
High-Use, Low-Satisfaction	Parking area	64.1%	39.9%
Low-Use, High-Satisfaction	Open green space	31.9%	53.9%
	Seating area	35.9%	50.9%
Low-Use, Low-Satisfaction	Playground	31.7%	43.9%
	Play court	17.9%	43.4%
	Front & backyard	48.7%	45.7%

Source: Authors

Sri Impian’s lack of an indoor hall is revealing. Hence, residents default to the parking lot for gatherings, but with far lower satisfaction. The result is clear that an indoor community room is a must have. Where it exists, it becomes the social anchor. A second reliable communal space generator is simple, that is shaded seating. Sri Impian shows that low-cost benches and resting corners can score high with residents when they provide basic comfort and a place to linger. Hence, a formal indoor hub plus informal, comfortable outdoor seating/pocket space delivers a balanced communal offer. By contrast, playgrounds and courts are valuable but niche, which is great for families with children or youth, but not universally used. If prioritisation is for all spectrum of users and social benefit, multipurpose halls and modest outdoor social spaces come first.

The findings from the three low-cost flats are not meant to be compared due to different settings, but to indicate that outdoor facilities and open spaces are inadequate for residents' needs. Overall, the result shows the provision of communal space is about closing gaps with the basic facilities, and not at all about big spends. For examples, for high-use/low-satisfaction areas (parking, front/back yards), addition of shade, seating, lighting, and marked pedestrian/event zones are essential. For low use but important spaces (playgrounds, open greens), fixing maintenance issues is crucial. Then only one or two durable play pieces, perimeter benches, bins, and light activation (garden beds, a simple loop) can be added for comfort and social activities. Halls and *surau* should be well maintained and well scheduled. Replication of shaded seating near activity generators invites users. In addition, facilities should be standardized according to site-specific needs. For instance, for Kenanga (8,340.09 m², framed by buildings) use modular shade at parking edges, provide wall-mounted benches, lighting, painted lanes and planter micro-greens. For Sri Impian (18,457.57 m², buildings and sizeable green), provide shaded loop path, pocket seating under trees, minor play refresh, and formalised temporary parking-event barriers. For Selayang Mulia (33,414.16 m², surrounded by extensive green), offer shaded plaza spine linking hall to open space, canopy trees and seating at court/play edges, and safe lit routes to spread use. This blends an indoor hub plus comfortable outdoor micro-communal spaces, which delivers the broadest, most dependable satisfaction across the three flats.

CONCLUSION

This study combined JMB interviews with a resident survey to quantify use and satisfaction by communal space type in three low-cost flats. Findings show clear patterns. The informal in-between areas (such as yards, corridors, parking) carry daily social life, while formal facilities (such as community halls, *surau*) are high-use, high-satisfaction communal hubs. Where a hall is absent, emergent activities happen, where residents repurpose parking for gatherings. However, comfort level is sacrificed. Heavy use, low satisfaction due to heat, lack of seating, and safety issues are the primary concerns. The flat with a fuller set of amenities (hall, playground, court) shows the best use–satisfaction alignment, underscoring the value of dedicated communal infrastructure.

Thus, by pairing JMB interview insights with resident survey data, the study pinpoints which communal space types deliver broad benefit and which underperform. The findings from this research are not intended for comparison across the three flats, but rather to highlight that the provision of outdoor facilities and open spaces is insufficient to meet residents' needs. The findings underscore that the allocation of only 5–10% of low-cost flat developments for public facilities and open spaces remains inadequate in addressing residents' needs. A

more substantial provision of public amenities such as play areas, community centres, pedestrian walkways, and green belts is necessary to promote outdoor relaxation, recreational opportunities, social interaction, and overall community well-being.

The study has several limitations, including its focus on three low-cost flats within a single region and reliance on cross-sectional, self-reported data, which may overlook seasonal or behavioural variations. As such, future work should expand the site sample, add direct and longitudinal observation, and trial low-cost interventions (shade, seating, maintenance) to measure gains in satisfaction and social well-being of low-income group residents.

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Received: 3rd June 2025. Accepted: 3rd November 2025