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A STUDY OF PROGRAM PERUMAHAN RAKYAT (PPR)

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CONTENTS

ABREVIATIONS

AGM	:	Annual general meeting
API	:	Application Program Interface
b	:	billion
B40	:	Bottom 40%
BCS	:	Building Condition Survey
BNM	:	*Bank Negara Malaysia* (Central Bank of Malaysia)
BSN	:	*Bank Simpanan Nasional*
BTS	:	Build-then-sell
CAGR	:	Compounded annual growth rate
CIDB	:	Construction Industry Development Board
CIS	:	Construction Industry Standard
CSR	:	Corporate Social Responsibility
DBKL	:	*Dewan Bandaraya Kuala Lumpur* (Kuala Lumpur City Hall)
DOS	:	Department of Statistics, Malaysia
DRN	:	*Dasar Perumahan Negara* (National Housing Policy)
EPF	:	Employees Provident Fund
FELCRA	:	Federal Land Consolidation and Rehabilitation Authority
FELDA	:	Federal Land Development Authority
GDP	:	Gross domestic product
GFA	:	Gross floor area
GOE	:	Gross operational expenditure
HCB	:	Housing Cost Burden
HDB	:	Housing Development Board
IBS	:	Industrialised Building System
INSPEN	:	*Institut Penilaian Negara* (National Valuation Institute)
JKM	:	*Jabatan Kebajikan Masyarakat* (Department of Social Welfare)
JMB	:	Joint Management Body
JPN	:	*Jabatan Perumahan Negara* (National Housing Department)
JPPH	:	*Jabatan Penilaian dan Perkhidmatan Harta (Valuation and Property Services Department)*
k	:	thousands
KL	:	Kuala Lumpur
km	:	kilometre
KPKT	:	*Kementerian Pembangunan dan Kerajaan Tempatan* (Ministry of Local Government Development)
KRI	:	Khazanah Research Institute
LCC	:	Life-Cycle Costing
m	:	million
M40	:	Middle 40%
MBPP	:	*Majlis Bandaraya Pulau Pinang* (Penang Island City Council)
MCO	:	Movement Control Order
MM	:	Median Multiple
MP	:	Malaysia Plan
MTEN	:	*Majlis Tindakan Ekonomi Negara (*National Economic Action Council)

ABREVIATIONS

NAPIC	:	National Property Information Centre
NEP	:	New Economic Policy
NGO	:	Non-governmental organization
NHS	:	National Housing Survey
OECD	:	Organisation for Economic Co-operation and Development
PAKR	:	*Perumahan Awam Kos Rendah* (see also: PLCH)
PBB	:	*Piawaiaan Perumahan Berkualiti*
PBR	:	*Program Bantuan Rumah*
PBRB	:	*Program Perumahan Rakyat Bersepadu*
PKPKR	:	*Program Khas Perumahan Kos Rendah*
PLCH	:	Public Low-Cost Housing
PLI	:	Poverty Line Income
PPA	:	*Projek Perumahan Awam*
PPA1M	:	*Perumahan Penjawat Awam 1 Malaysia*
PPR	:	*Program Perumahan Rakyat*
PPRM	:	*Program Perumahan Rakyat Dimiliki Dasar Baru*
PPRS	:	*Program Perumahan Rakyat Disewa Dasar Baru*
PR1MA	:	*Perumahan Rakyat 1 Malaysia*
RI	:	Residual Income
RM	:	Ringgit Malaysia
RMR1M	:	*Rumah Mesra Rakyat 1 Malaysia*
ROS	:	Registrar of Societies
RTI	:	Rent-to-income
RTO	:	Rent-to-own
RUMAWIP	:	*Rumah Wilayah Persekutuan*
SEDC	:	State Economic Development Corporations
SOCSO	:	Social Security Organisation
SPNB	:	Syarikat Perumahan Negara Berhad
sqft	:	square feet
UK	:	United Kingdom
USA	:	United States of America

GLOSSARY

Amenities	:	Amenities are goods and services, site or region-specific, that make some locations attractive to live and work. Their opposites, disamenities, make places less desirable. Examples of amenities include public goods and services (e.g. schools and education centres), private consumption goods (e.g. restaurants), transportation (e.g. train and bus stations) and communication, as well as cultural institutions (e.g. museums). *Source: Mulligan and Carruthers (2011)*
Compounded annual growth rate (CAGR)	:	An annualised growth rate which provides a constant growth rate over a specified period. The formula is: CAGR = [(Ending value/Beginning value) (1/Number of time periods) – 1] × 100.
Effective demand	:	The desire of consumers to acquire a good or service, backed with their ability to pay for it. *Source: Collin (2003)*
Equivalence scale	:	A measure of the cost of living of a household of a given size and demographic composition, relative to the cost of living of a reference household (usually a single adult), when both households attain the same level of utility or standard of living. *Source: Lewbel and Pendakur (2006)*
Gross floor area (GFA)	:	"Floor area" means the total area of floor space within a building, as measured between the external sides of walls or, in the case of party walls, between the centres of such walls. *Source: Malaysia (2006)*
Home equity	:	The total estimated value minus the total amount of principal owed on all mortgages on a particular property. *Source: Krivo and Kaufman (2004)*
Housing complex	:	Refers to a group of housing units that are located on a common piece of land or in a common building. A housing complex can be a single building or a group of buildings that share common facilities and amenities, such as parking, public hall, praying space and playgrounds.
Housing tenure	:	The financial arrangement under which a particular household occupies all or part of a housing unit. Common types of housing tenures include ownership and rental of all or part of the housing unit. *Source: OECD (2022)*
Housing unit	:	A single dwelling unit or living space within a larger structure that is as a separate living quarter. A unit may be occupied by a single household or by a group of unrelated individuals.
Housing voucher	:	Housing voucher is a form of housing subsidy, usually given to low-income households to help pay the cost of renting in the private housing market.
Life-cycle costing (LCC)	:	A calculation of the estimated costs needed for a building throughout its life cycle—from construction to demolition.

GLOSSARY

Maintenance costs	:	The costs of keeping the building in good working condition, repair damages and prevent potential breakdowns.
Median multiple	:	An indicator of housing affordability, in which a housing market with a median house price of three times or less than the median gross annual household income is considered affordable. *Source: Suraya Ismail et al. (2019)*
Poverty line income (PLI)	:	The minimum income needed by a household to meet the basic food and non-food needs for each of its members. The Food PLI is the amount of income necessary to meet a household's daily nutritional requirements as determined by the Ministry of Health. The non-food PLI is the amount of income necessary to meet the minimum requirements for items such as clothing, housing, transport and other non-food needs by sex and age of a person and is based on the expenditure patterns of low-income households. *Source: DOS (2020b)*
Rent-to-income (RTI) ratio	:	An indicator of private renting affordability. It is considered affordable if the rent payable is up to 25% of a renter's gross household income. *Source: Suraya Ismail et al. (2019)*
Social housing	:	Depending on the country, social housing is broadly designed to satisfy the needs of households who are unable to 'compete through pricing' in the marketplace for housing of an acceptable standard, either for renting or ownership. *Source: Oxley (2004), Angel (2000), UN-Habitat (2009).*
User satisfaction survey	:	A survey that measures the satisfaction levels of users. The feedback obtained can be used to measure building performance and identify areas for improvement.

EXECUTIVE SUMMARY

Historically, the provision of public housing by the state was a means to provide shelter for the high numbers of squatters due to increased rural-urban migration which began in the 1970s. Generally, squatter settlements are a natural and temporary by-product of urbanisation as workers flock to urban areas in pursuit of jobs before the advent of sufficient housing, or prior to having adequate funds to enter the formal housing market. It is assumed that over time households will generally improve their economic standing and move out of or upgrade their housing units. Slums or informal settlements were considered as 'cheap housing' for the poor working their way into the urban economy.

Over the years, public housing programmes evolved into social housing (i.e. *Program Perumahan Rakyat*, PPR), and it remains targeted at providing shelter for poor households. The number of households in poverty from the 5 PPRs housing complexes surveyed is greater than 60% (those earning less than PLI of RM2,208) with more than 21% considered as 'hardcore poor' (earning less than food PLI of RM1,038). Poverty is higher for households headed by part-time workers (80.6%), pensioners (72.1%), housewives (70.5%) and those unemployed/not working (70.6%). 35% of household heads are self-employed or part-time workers, and 13% are tertiarily educated. Most residents' place of employment is near their homes, especially the self-employed. While the majority of residents are renters, there are however a significant proportion of owner-occupiers (more than 20% in Kuala Lumpur). All residents in PPR Jalan Sungai, Pulau Pinang rent. A majority of household heads are in the older age group, with a median age of 52 – 54 years.

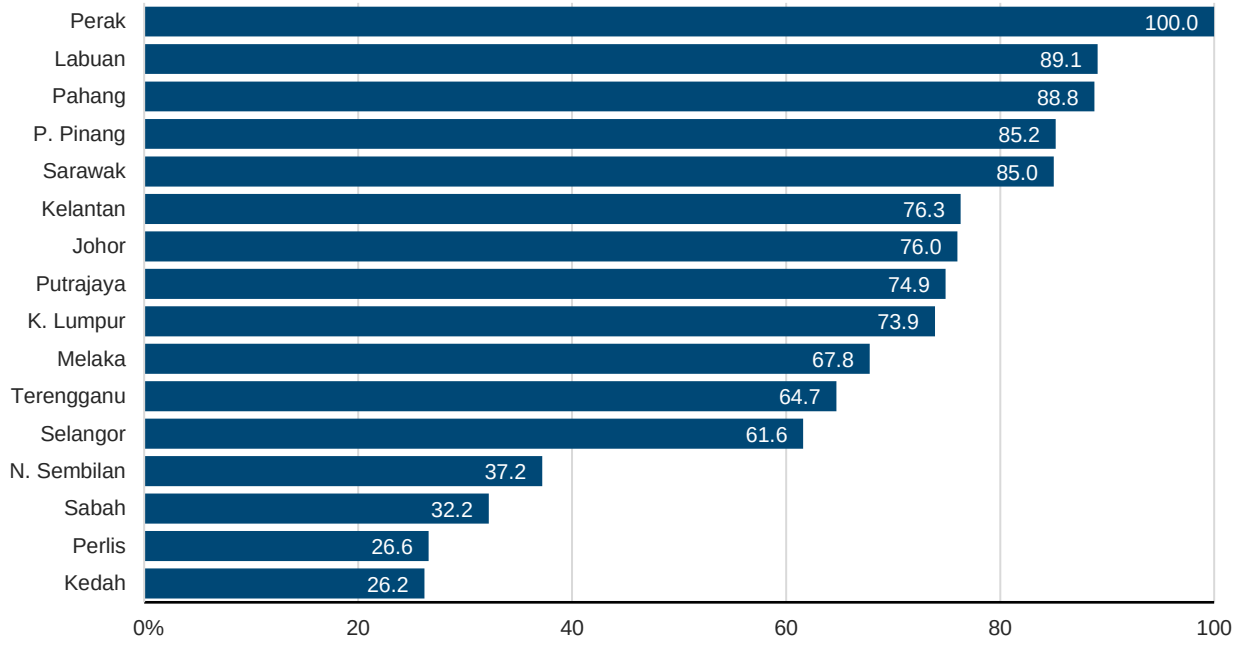
The direct provision of formal social housing by the government was considered a solution to house the poor with better living conditions compared to squatter settlements, but it inadvertently created new problems of 'poor housing for the poor' in stratified buildings. All residential complexes remain in poor quality due to inadequate funding for maintenance and repair works. Most buildings do not provide scheduled maintenance services to prevent further building decay. Originally poorly conceived building designs and low-quality construction have further exacerbated the deteriorating conditions. This is more severe in complexes of higher densities. These factors pose a threat to positive living conditions and increase the costs of maintenance to those who own the units.

The affordability problem for the social sector is first and foremost an issue of poverty—not housing. The social sector primarily houses residents due to poverty or those categorised as the economically vulnerable. In order to address this problem, solutions must therefore involve policies for the alleviation of poverty. On the other hand, the negative externalities of housing deprivation dictate homelessness and the inability to lead a life of value. Therefore, state support in the form of direct housing subsidies, general income support and other social programmes are normally required.

A significant proportion of households (and not just the poor) will require social housing if the general affordability of housing is left unattended. State governments generally decide on specific 'needs-based' criteria to estimate the amount of assistance needed for housing the poor and economically vulnerable. Given that access to the housing market is primarily determined by a household's ability to pay for a suitable home, state governments must also monitor the general level of housing affordability within the immediate locality. This is because the high unaffordability of housing supplied by the private sector may increase the number of households that 'fall into' the social sector.

There are examples of market failures in the provision of housing in Malaysia. The figure below demonstrates the extent of government assistance among different states and federal territories in Malaysia for 2021. Note that this assistance covers both social housing (PPR) and government-assisted affordable housing schemes. Government assistance is normally provided when house prices supplied by the private market sector fails to accommodate the least well-off. However, when government assistance is required for more than half, or in some cases, encompasses nearly the whole population, it exemplifies a failure of market-led housing provisions.

Share of households under state social and government-assisted affordable housing programmes qualifying income criteria, 2021



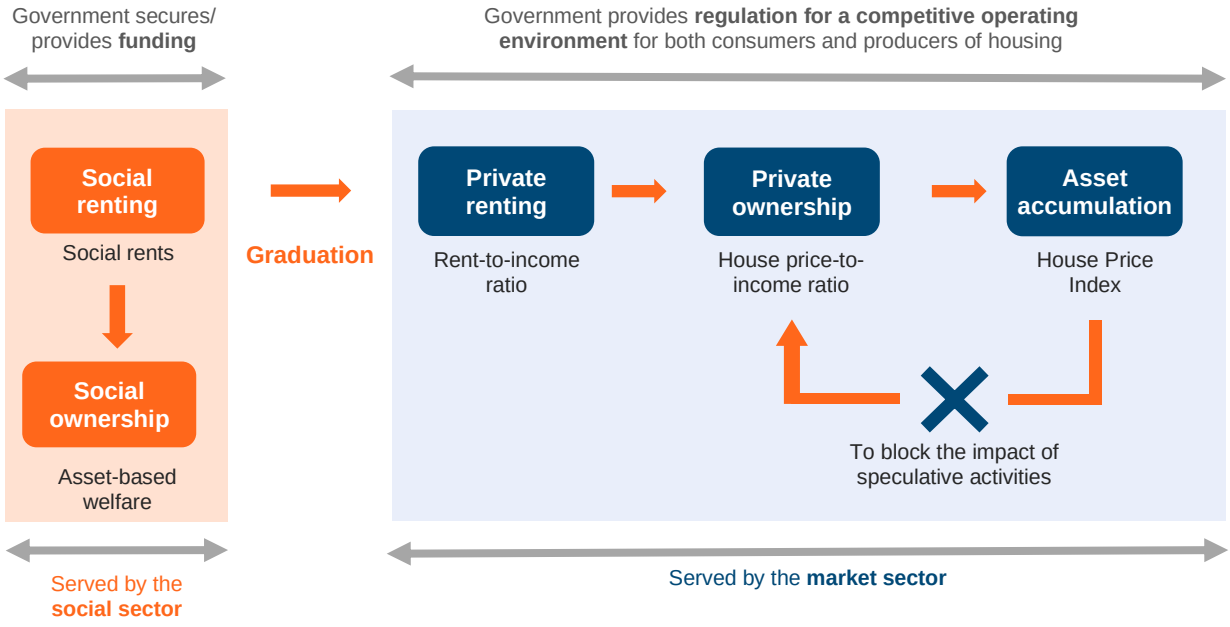
Note: For this estimation, the qualifying income criteria for government-assisted affordable housing programmes in Kelantan was revised downwards by RM500 to match the income bands reported in DOS's Household Income Survey 2019.
Source: KRI compilation from various state government websites, DOS (2020b) and KRI calculations

The starting point for the design of a comprehensive social housing system should be from a statement of objectives. International benchmarks for social housing policies appear to support the following guidelines:

1. Decent lives for people in need despite higher living costs.
2. Transition homes for the underprivileged.
3. Affordable, integrated (as opposed to segregation of the poor) and well-maintained housing estates.
4. Security of tenancy and stability; for people in need to:
   a) support a good quality of life;
   b) provide a platform for people to take up education and employment; and
   c) facilitate a transition from social housing to affordable housing or tenancy in the private rental market.

Social housing must be seen as a management responsibility by governments; within social improvement objectives with proper filtering of households and maintenance of social housing units, rather than just as a 'construction' solution (i.e. based on units built). In line with Dasar Perumahan Negara 2.0 (2018 - 2025) (DRN 2.0), an enabling policy framework should aim to create a progression which enable households to move from social renting to private renting and eventually achieve home ownership. Under this framework, there is a case to be made for social housing to be classified as transition housing but with an institutionalized pathway for eligible households to 'graduate' into the market sector.

The different roles of government for the social and market sector



Source: Adapted from Suraya Ismail et al. (2019)

There is little merit in housing policies that solely focuses on the poor, in the hope that 'the market' will take care of the rest, without ensuring the proper functioning of the market. Findings from these case studies follows a well-known phenomenon in housing studies where the creation of a universal 'housing queue' makes it very difficult for the poor to have decent housing, while the not-so-poor remain ill-housed. The findings also suggest that there are extremely limited options for residents to migrate from the social to the private/market housing sector.

The management of social housing policies can be executed through 3 policy thrusts:

1. **The management of PPR households**: to create a household registry based on housing needs with eligibility criteria that extends beyond income levels; for example to include household size, infirmity and physical disabilities.
2. **The management of PPR housing units:** to create a housing registry for social housing units supplied by both the public and private sectors.
3. **The management of private sector housing units**: to prevent graduating households from residing in worst-off housing conditions.

Policy Thrust 1: The Management of PPR Households

1.1. Who is 'in?'—To introduce a tiered eligibility basic-needs approach

One of the eligibility criteria for social housing is a gross household income of less than RM3,000. This criterion automatically includes 20 – 25% of Malaysian households. Hawati Abdul Hamid, Ho, and Suraya Ismail (2019) suggest that the use of gross income is imprecise in capturing households' deprivations. For example, the addition of just one other criteria of household size would rectify an inclusion-exclusion error of approximately 20%. Therefore, it suggests a tiered eligibility criterion should introduced for better filtering purposes.

A household registry will facilitate the management of PPR households; in terms of ensuring targeted housing for those in need. The database should consist of both demographic and economic profiles of PPR households e.g. household income, size, and physical disabilities. Local councils can employ the basic-needs approach as one of the criteria for entry into the registry and a Rent-to-Income (RTI) 20 – 25% ratio as an indicator for the exit strategy. Each state may create their database with filtration indicators (basic needs approach, RTI) specific to the cities' cost of living and rental market conditions.

Policy options:

1. To create a household registry based on housing needs for the urban poor; to have assistance from the E-Kasih or other similar databases covering the urban vulnerable/poor.
2. To replace the standardized RM3,000 eligibility criteria with a basic needs approach for household filtration into social housing programmes.
3. To institutionalize periodic updates on the demographic and economic profile of PPR residents, the cost of living and private rental prices in the local area for the efficacious management of households in the social sector.

1.2. Who is 'out'?—Households who live above basic-needs should migrate into private housing schemes

Households that have surpassed the eligibility criterion—those who live above basic needs thresholds and with RTI ratio lower than 20 – 25% demonstrate the capacity to migrate into private housing market. It is important to ensure that households are relocated within the vicinity of their PPR buildings or other central areas. Our study shows that residents are mostly satisfied with the location of the PPR complexes since it is situated in central locations with reasonable accessibility to key amenities. Where there is a short supply of affordable renting premises within the general area, it is suggested that the government provide housing vouchers or general income support as temporary measures.

Policy options:

1. To create exit strategies that support household in finding affordable homes- the creation of a housing allowances system to promote more options/choices.
2. To promote an integrated housing experience (as opposed to segregation of poor households) and incentivize the provision of affordable rents in the private market.
3. To utilize the Rental Tenancy Act as a safeguard against the possibilities of 'rent hikes' by the private sector due to government housing vouchers.

1.3. To discontinue social ownership especially in high-density, stratified buildings and to inform residents of the high costs of maintenance

The transfer of public rental stocks to sitting tenants for ownership leads to the creation of 'poor homeowners'—those who own the dwelling but lack the financial means to provide adequate maintenance for the building complex. This could easily lead to a negative home equity proposition for owners. Furthermore, the selling of existing units depletes the availability for future provision. This is critical in highly urbanized localities where there is always a burgeoning need for social housing.

Rent levels in social housing is generally determined to recover the costs of maintenance and refurbishment. Following life-cycle costing (LCC) principles, there are sound economic reasons for governments to invest in better-quality buildings in order to minimize maintenance costs. Low quality buildings generally increase the costs of maintenance. These costs will be transferred to a) households—by leveraging higher rents, or b) government—through higher subsidies. Notwithstanding current building conditions, the findings also suggest that the vast majority of PPR households may be able to afford a higher rental rate than the present RM124.

Policy options:

1. The state must give prospective buyers of social housing sufficient information on the expected cost of maintenance and repairs for the unit and complex. This can be done with technical input from professional facilities managers and building condition surveys (BCS).
2. Sitting tenants must be made aware of the higher costs of maintenance associated with taller buildings.
3. To increase the rental rates of PPR to the equivalent costs of building maintenance, provided the buildings were originally built to optimize maintenance and refurbishment costs.

Policy Thrust 2: The Management of PPR Housing Units

2.1. Policy recommendations for Existing PPRs

2.1.1. To refurbish existing PPR units into multiple Gross Floor Area (GFA); to account for old-age and physical disabilities/infirmities

Housing standards in Malaysia have primarily focused on the building and construction specifications for new dwellings. They do not provide a framework or guidelines to upgrade the quality of existing housing stock, nor does it define suitable occupancy levels to prevent conditions of overcrowding.

For example, in the UK, there are clear standards regarding the minimum floor area and occupancy level by number of bedrooms, whereas Singapore offers multiple public housing schemes (with varying GFAs) targeted at different sizes of households. Hence it is important to recognise that the current practice of 'GFA: one-size fits all' approach poses a major problem of inefficient use of space for the heterogenous nature of household size.

Our findings show that the household size is generally between 3 to 6 persons. Furthermore, household heads are also older, with their median age ranging from 52 to 54 years. Moreover, 1 in 10 households have at least one member with physical disabilities.

Policy options for refurbishments:

1. Improve the GFAs of PPR units following good quality housing standards.
2. Introducing multiple GFAs to accommodate different household sizes; as per Singapore's HDB model.
3. Account for old-age and physical disabilities in the design of units and complexes.
4. Include participatory processes of user satisfaction surveys and building technical assessments for refurbishments to meet the functional requirements of households with reasonable maintenance costs.
5. Design better public spaces and amenities.

2.1.2. To demolish PPR buildings if the maintenance and/or upgrading costs are too expensive

High rise PPR complex requires good maintenance practices to preserve its value throughout the building lifespan. A strategic construction planning technique is needed to ensure adequate maintenance costs are estimated for the duration of the building life. This can be achieved through the implementation of life-cycle costing (LCC) in the development and refurbishment of PPR projects.

Several PPR complexes have high population densities. High densities coupled with substandard maintenance practices will accelerate the deterioration of PPR complexes into urban slums. More recently, the Covid-19 pandemic highlighted the increased risk to public health in highly dense complexes and overcrowded homes.

It is also suggested that the existing social housing stock is audited to ascertain the most feasible course of action, whether the best option for some buildings would be demolition.

Policy options for maintenance or demolition:

1. Implement building audits to all existing social housing stock.
2. To design with LCC parameters, maintenance and building rehabilitation concerns.
3. Invest in building condition surveys (BCS) for the efficient monitoring and functioning of buildings.

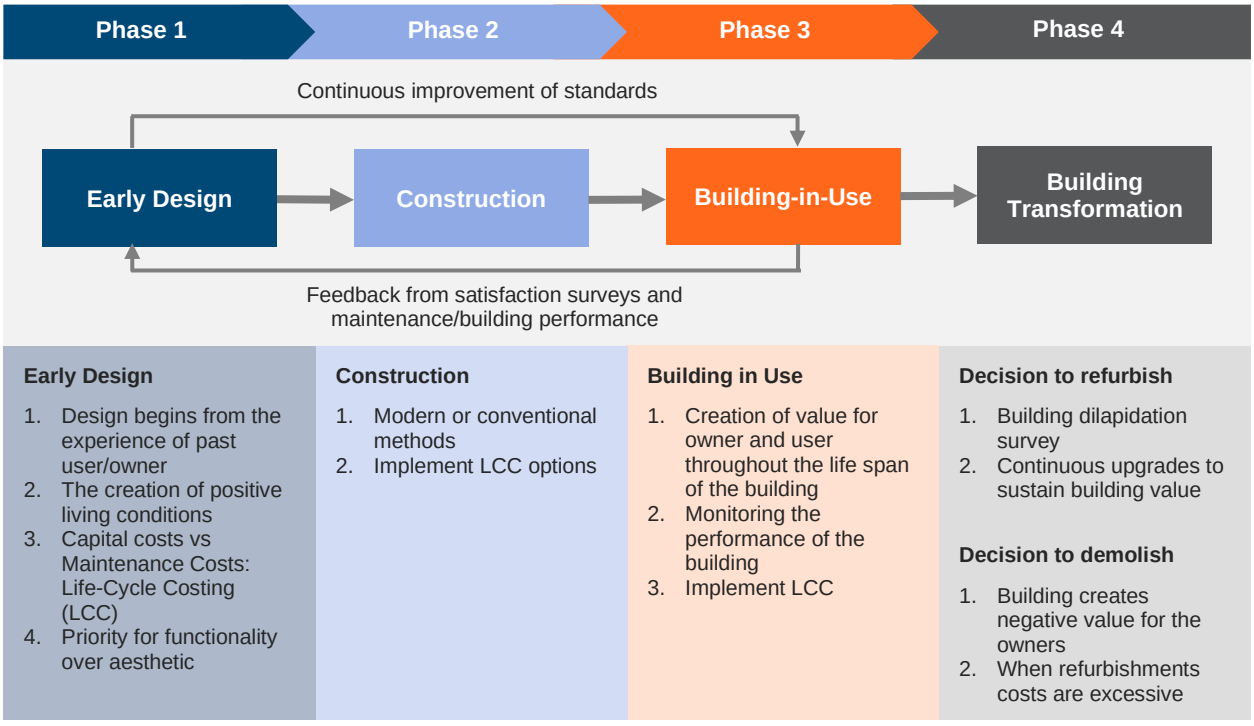
2.2. Policy recommendations for new PPRs (incoming supply)

2.2.1. To align the housing standards of social housing (PPR) to affordable housing, but with multiple GFA units for the former.

The minimum standards for all housing in Malaysia should be similar, irrespective of whether they are provided for the social or market sector. Universal standards are one of the reasons why most social housing system in some countries are successful. It is important to devise multiple GFA standards in the social sector to circumvent the problems of overcrowding or sub-optimal space utilization.

Furthermore, we propose a method for embedding continuous improvements of housing standards into the building redevelopment framework. It consists of 4 phases: **Early Design, Construction, Building-in-Use** and **Building Transformation.**

Building Redevelopment Framework



The development of social housing ideally must take into consideration the motivation to create value for both owner and user during the lifespan of the building. Therefore, the *Early Design* phase begins with the collection of inputs from user satisfaction surveys and technical assessments of building performance for designs; first, to satisfy the functional requirements of households; and second, possible to be maintained at relatively reasonable cost.

The continuous improvement of housing standards will arise from the interplay of *Early Design* and *Building-in-Use*. This iterative process can be achieved through the technical input of professionals and a comprehensive analysis of the occupants' profiles, which reflect their specific requirements. Therefore, standards and regulations must be **updated regularly** to reflect these characteristics. This iterative process is different from the current linear process in devising building standards, where there is no feedback loop into the design process from the perspectives of users and owners of the buildings and their specific requirements.

Policy options:

1. To ensure the minimum standard for social housing adheres to the national housing standard for affordable homes.
2. To derive multiple GFAs house units with the attendant occupancy levels.
3. To account for old-age and physical disabilities in the design of units and complexes.
4. To institutionalize a continuous process for the improvement of standards in the building redevelopment process.
5. To include a participatory process of user satisfaction surveys and technical assessments for building designs in order to meet the functional requirements of households and able to be maintained at reasonable cost.
6. To create better public spaces and amenities.

2.2.2. To align the financial incentives between 'those who build' and 'those who maintain' through Life-Cycle-Costing (LCC)

There appears to be a misalignment of financial incentives between parties involved in the funding of the building (capital costs) and the management (maintenance costs) of the building. This is because social housing is funded by the Federal Government, but the maintenance costs are borne by Local Councils. If the capitals costs are low due to poor-quality materials and design, then normally, the maintenance costs would be higher. Financial incentives can be better aligned with LCC method. The costs of constructing the building (capital costs) and the attendant costs of maintenance (building operation costs) will be transparent for both parties. Decisions on LCC could be executed during the *Early Design* stages of the building process and followed through into the *Construction* and *Building-in-Use* phases.

Some local councils might face financial constraints in being able to afford the high maintenance and rectification costs of PPR buildings. Hence, the implementation of LCC is required to anticipate the long-term maintenance cost and therefore assist in aligning the incentives between Federal and State governments.

Policy options:

1. To implement LCC for PPR projects.
2. Align the financial incentives between Federal government (the entity that builds must ensure maintenance costs are reasonable) and State government (collects rent for the purposes of scheduled maintenance).

2.2.3. Relocation must occur in core urban areas, with good accessibility and amenities

Our findings show that most residents do not travel far for employment, schooling, daily needs and social activities/leisure. Hence, it is crucial to ensure that the urban poor/squatters are relocated to areas with good accessibility to key amenities appropriate for their demographic, and lessen any negative impact from further displacement.

Policy options:

1. To continue prioritising the relocation of vulnerable and displaced communities within their existing neighbourhoods, and minimise disruption for employment and schooling.
2. To continue providing appropriate job opportunities and affordable services within the vicinity of PPRs, by situating them in core urban areas.

Policy Thrust 3: The Management of Private Housing Stocks

3.1. An integrated database on building conditions and rents is needed to project good quality of housing for all

There are households who are eligible for graduation and yet continue to reside in PPRs; and there is also a considerable percentage of residents in the private rental market who are eligible for social housing.

Therefore, an integrated database of building quality and rents would help facilitate the management of housing eligibility and occupancy. This database can provide access to information such as the supply and rents of available units, which in turn could lead to better market efficiency and curb incidences of excessive speculation in the private rental market. The database may also serve as a tool to manage and identify changes in housing occupancy such as incidences of overcrowded homes or the increase in the number of vacant properties.

Policy options:

1. A National Housing Survey (NHS) is critical to populate the housing registry. This could be executed in major cities where social housing is required.
2. To conduct Building Condition Surveys (BCS) to deliver good quality housing for both the social and market sector.
3. To set up an integrated rental database to capture the supply and rents in the private sector.
4. To monitor the general affordability of housing prices and rents.

INTRODUCTION

INTRODUCTION

"…….economics remains partly a moral science. It can't be done without moral presuppositions, and it's hard to do it well without addressing moral issues intelligently."

Hausman and McPherson (1996)

Introduction

The provision of social housing remains a formidable challenge for many developing countries due to the rapid expansion of urban and population growth. Subsequently, there has been an increasing amount of public policy research focusing on the quality of social housing; the investment required by governments to maintain sufficient social housing schemes and the impact of social housing provisions to prevailing private housing market conditions.

Developed countries have increased the number of supply providers to include not-for-profit private housing developers, building institutions, cooperatives, public-private partnership entities to complement the 'traditional' role of government as the sole provider of social housing. Some countries have created differentiated property rights to ensure a proportion of the housing stock remains available to key workers in the city to maintain an adequate supply of labour. In recent decades, some European countries have reduced the emphasis on building more social housing to support low-income households, and instead utilised housing vouchers as a direct subsidy to households- therefore relying on the private rental market as a means to shelter households in need[1].

In developing countries, there remains a burgeoning informal market for shelter. In Pakistan alone, only 16% of the formal housing stock caters for low-income group comprising approximately 63% of population. Due to accelerated population growth and inward migration to cities, many major metropolitan areas in the developing world (for example Brazil, India, Indonesia and Thailand) have deficient resources in informal housing or slums upgrades. Here, property rights of both public and private land holdings, are the main policy instruments used by governments to provide shelter. The provision of both informal and formal housing is often viewed as complementary resources to house people in need[2].

However, any suggestions regarding the transfer of ideas or policies between countries need to be tempered by a note of caution. It is important to recognise significant differences in historical, institutional, and economic circumstances between nations. For example, a housing voucher system is only advantageous if supported by an efficient rental system with ample good-quality housing stock. Otherwise, further state intervention might entail in the form of rent control to curb opportunistic behaviour from landlords. More often than not, rent controls (under a housing voucher programme) lead to sub-standard housing quality.

[1] Whitehead and Scanlon (2007), Czischke (2005), Pugh and Catt (1984)
[2] Chen and Shin (2019), Fox and Goodfellow (2016), Abelson (1996)

The analysis of social housing in this report focuses on the formal provision of shelter by the state, rather than the effects of upgrading existing informal/squatters' settlements[3]. The case studies broadly represent two groups of households; households in need of shelter as well as households migrating from informal squatter settlements to formal social housing complexes administered by the state (federal government, state governments and local councils).

What is the "Size" of the Social Housing Sector in Malaysia?

The social sector primarily houses residents due to a) poverty and b) the lack of ability to pay for rent or mortgages. For the former, the affordability problem for this stratum of society is first and foremost an issue of poverty as opposed to an issue of housing. In order to address this problem, it must therefore involve policies for the alleviation of poverty. On the other hand, the negative externalities of housing deprivation dictate homelessness and the inability to lead a life of value. Therefore, state support in the form of direct housing subsidies, general income support and other social programmes are normally provided.

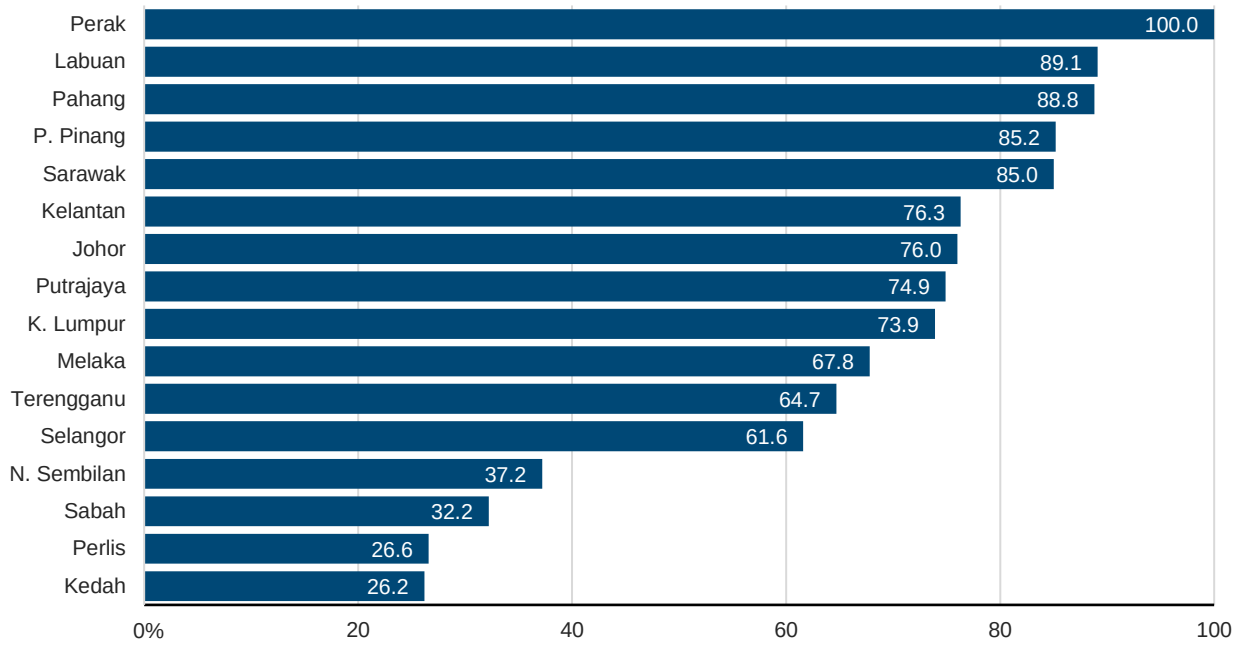
Social housing provision based on b) the lack of ability to pay for rent or mortgages warrants further investigation on both the level of poverty/ needs-based provision and the efficiency of house prices to accommodate local demand. As far as social housing is concerned, it is state governments (as opposed to Federal government) who generally decide the qualifying criteria on 'needs-based assistance' to estimate the size of housing subsidies.

However, it is unclear whether the eligibility criteria as currently imposed by state governments are tied to the state population's poverty or income levels. Given that access to the housing market is primarily determined by a household's ability to pay for a suitable home, state governments must also consider the general level of housing affordability within the immediate locality. This is because the high unaffordability of housing provision through the private market may increase the number of households in the social sector.

This can be seen in the chart of government assistance by States in 2021. Note that this assistance covers both the social housing (i.e. *Program Perumahan Rakyat*, PPR) and government-assisted affordable housing schemes. Government assistance is normally provided when house prices supplied by the private market sector fails to accommodate the economically disadvantaged. However, when government assistance extends for more than half or in some cases, nearly the entire population, it exemplifies the failure of market-led housing provisions.

[3] Note the existence of Kampung Warisan, Kampung Cina, where settlements have been formalized by Government in terms of the provision of land titles and access to local infrastructure.

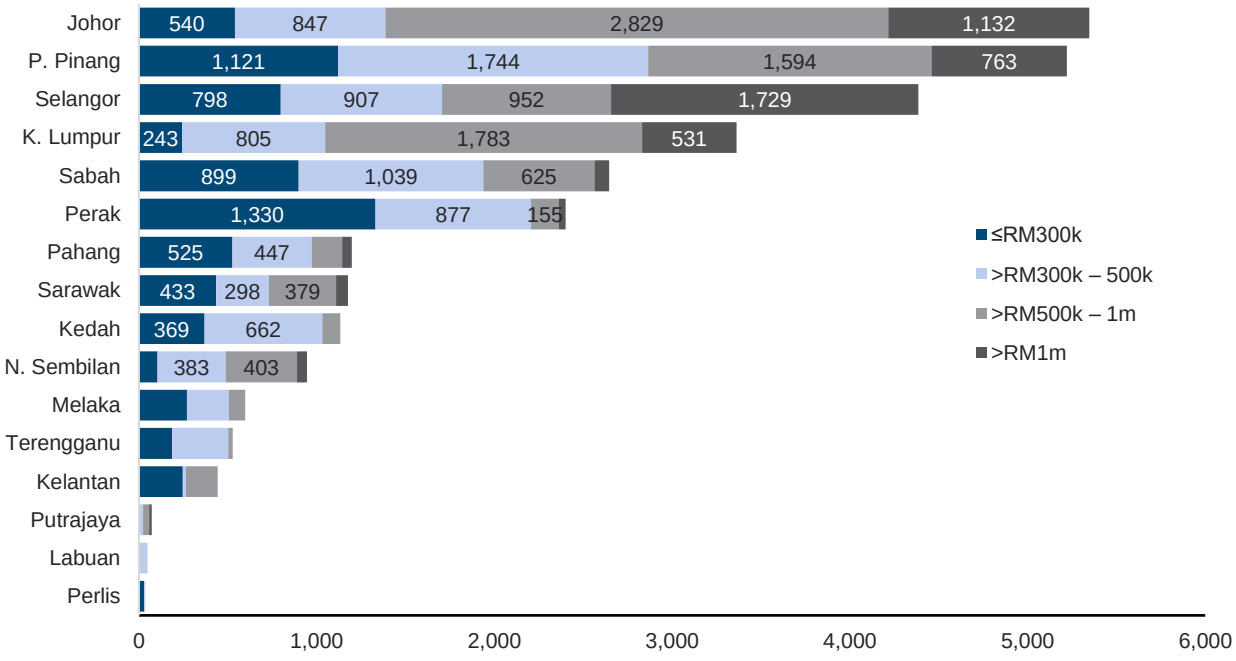
Share of households under state social and government-assisted affordable housing programmes qualifying income criteria, 2021



Note: For this estimation, the qualifying income criteria for government-assisted affordable housing programmes in Kelantan was revised downwards by RM500 to match the income bands reported in DOS's Household Income Survey 2019.
Source: KRI compilation from various state government websites, DOS (2020b) and KRI calculations

On the other hand, the figure below shows the number of unsold housing units in several states. It appears that most of the unsold stock does not fall within the general affordability threshold of the 3x median multiple but is in the more expensive segment.

Number of unsold housing units by price range, Q3 2022

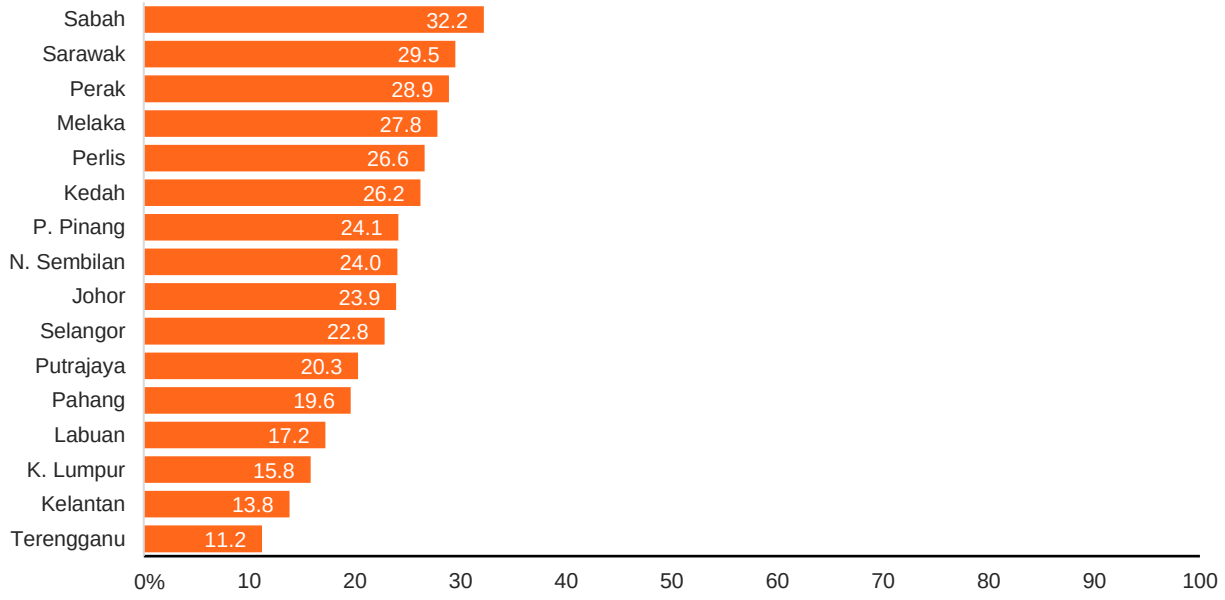


Source: NAPIC (2022)

The excessive numbers of unsold stock amongst higher priced properties within the context of deteriorating housing affordability will have a direct impact on the need to increase the number of social housing units. Social housing units will not be catering for just the poor but also extend to middle-income households. There appears to be a clear mismatch between government policies for social housing and the provision of genuinely affordable private housing. An increase in government funding will be needed to support an ever-expanding social sector due to the prevailing high unaffordability of housing within the private sector. This process creates a chronic cycle where government intervention is required to buffer an inefficient housing market from responding to effective demand, and at the same time support an ever-expanding social sector. These policies will produce a severe mismatch between demand and supply, where housing provision in the private sector remain unaffordable for a majority of the population.

If on the other hand, we assume that an efficient housing market should provide homes to at least 50% of the population earning above the state median income, only households who earn below 60%[4] of the state median income are at risk of requiring housing assistance within their locality. Based on this definition, qualifying households in each state make up 11.2% (Terengganu) to 32.2% (Sabah) of the population, as demonstrated in the diagram below.

Percentage of households under the proposed qualifying income criteria, 2019



Source: DOS (2020b)

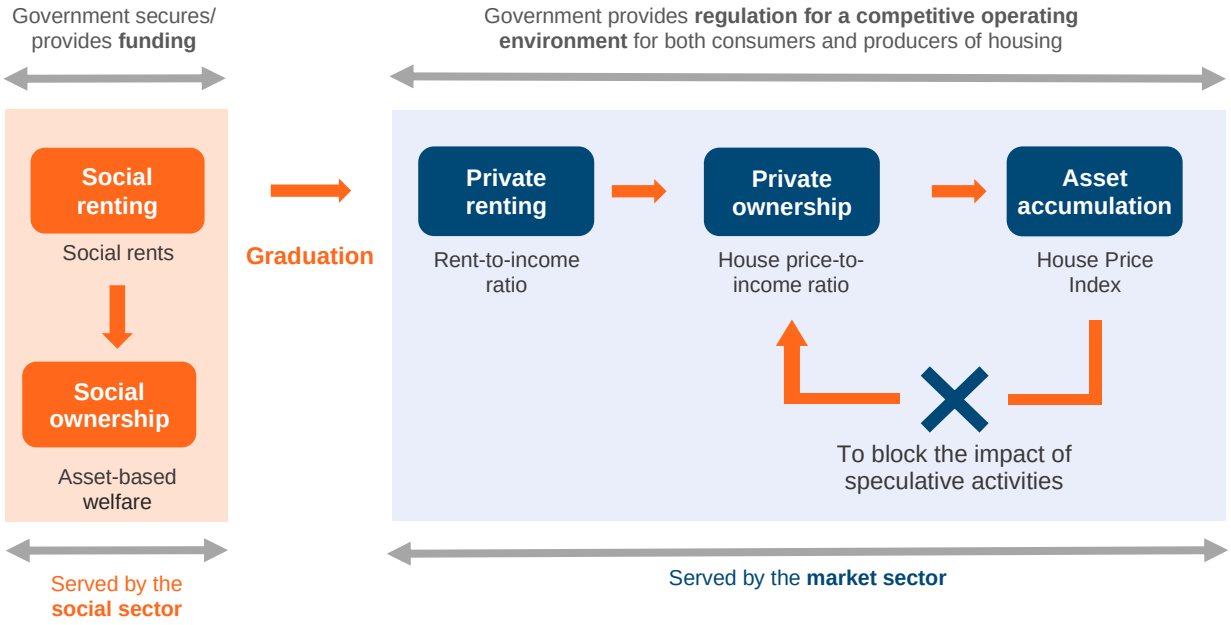
It is important, however, to note that the calculated income criteria in the above figure apply only to the average household in the state. Similar to the determination of poverty in the country, households which are smaller or larger may have a different qualifying level of income. It is vital then to adjust this income qualifying criteria according to the size of the household at the operational level. This is commonly done using equivalence scales that consider the additional cost each member of the household would add or deduct from the general threshold.

[4] Households earning below 60% of the area median income are considered to be in relative poverty in the UK and the European Union. In the US, the Department of Housing and Urban Development considers households that earn below 50% of the area median income to be at risk of poverty.

It is critical to define and evaluate these instances of need in order to estimate the size of the social housing sector so that local governments can be more accurately informed when planning solutions for this segment. Drawing from countries like Canada and the UK, which have implemented these evaluations, this means that estimation for the social sector must go beyond the current use of the open registration system. Local governments must undertake a comprehensive study of their local housing market to gain a better understanding of the range of households which fall under the needs criteria in their area.

Building an Enabling Policy Framework

The different roles of government for the social and market sector



Note: *Affordable private renting: 20 – 25% of gross household income
** Affordable private ownership: 3x annual median household income
Source: Adapted from Suraya Ismail et al. (2019)

The above diagram depicts the importance of managing both the social and private market sectors. An efficient housing market should ensure only 10 – 30% of the population fall under the social sector. However, in the case of Malaysia, housing subsidies have, in some instances, extended up to 100% of the population. Therefore, a comprehensive housing agenda should be seen as a move towards guiding and managing the housing sector, recognising housing as both a basic need and catering for effective demand[5]. Often, policies are carved out for the purposes of welfare such as social housing (catering for basic needs) are designed without cognisance of the need to regulate prevailing market conditions. This, along with the continuous subsidisation of private sector housing, creates an unaffordable housing market that forces more households into the social sector.

[5] Oxley (2004), Suraya Ismail et al. (2019)

There is little merit in a housing policy that solely focuses on the poor, in the hope that 'the market' will take care of the rest. Experience from other countries suggest that policies which focuses only on the 'poor' create 'universal housing queues'[6]—a phenomenon where the poor has difficulty in getting access to decent housing, while in turn, the 'not-so-poor' remain ill-housed. A narrow focus on the welfare aspects of housing is often insufficient, resulting in imbalances and mismanagement of the housing sector. Therefore, it is crucial to move away from the notion that the provision of shelter is necessarily a drain on government fiscal considerations- but to view housing as an important and productive sector, where policies carry serious repercussions for overall national economic performance and societal wellbeing[7].

What is the Objective of this Research?

Background

Prior to Independence, public housing in Malaysia was known as 'institutional quarters', targeted at government officials. Post-Independence, the government introduced home-owning policy, aiming to provide housing for all segments of society. One of the initiatives was the implementation of the Public Low-Cost Housing (PLCH) program for low-income households. In rural areas, housing provision was conducted via land development schemes.

Social housing was initiated in Malaysia to overcome the proliferation of squatter settlements following rapid urbanization. The implementation of the New Economic Policy (NEP) along with rapid industrialization contributed to an increasing trend of rural-urban migration. Statistics show that the urban population grew by almost 60% in the decades between 1970 and 2000. Additionally, the urbanization level has more than doubled since 1970, increasing from 33.4% to 74.7% between 1970 to 2015.

An unprecedented level of urban population growth led to some cities struggling to meet the rising infrastructure demands of their populations, including the need for affordable housing. Although the rising housing needs were addressed in Malaysia's 5-Year Plans via various housing programs, housing shortages persisted. This is possibly due to lower rates of completion of PLCH units than the targeted units in the 5-year plans. Moreover, many low-and middle-income urban residents faced financial struggle to purchase a house as not all inward urban migrants managed to acquire the purported economic benefits of urban centres i.e. jobs with decent incomes.

Shortages of affordable housing coupled with migrants' financial constraints ultimately contributed to increased urban squatting[8]. In response, the government implemented a squatters' relocation programme intended to eliminate all squatter settlements by 2005. Squatter tenants were given options to either buy or rent existing low-cost housing units or be temporarily placed in transit houses before being relocated to future low-cost housing projects.

[6] Ramirez (1978)
[7] Angel et al. (1993)
[8] Statistics show that the number of squatter settlements in Kuala Lumpur increased from 32% in 1968 to 37% in 1971. As of 1998, Kuala Lumpur recorded 197 squatter settlements. Source: Ayu Abdullah Yusfida et al. (2017), DBKL (2004)

Prior to 2002, there existed two separate social housing programmes that were amalgamated under the new PPR policy. The first was the PLCH programme or known as *Perumahan Awam Kos Rendah* (PAKR) that was introduced in the 1st Malaysia Plan (MP) (1976-1980). Under this programme, housing units are sold to low-income groups, either outright or through rent-to-buy instalment plans. The second programme was the *Program Perumahan Rakyat Bersepadu*, (7th MP in 1998), which provides rental housing units to resettle urban squatters. The rent was set at RM124 per month (deemed affordable for squatters).

In February 2002, the Cabinet approved rebranding the PAKR program as *PPR Dimiliki Dasar Baru* (PPRM) and the PPR Bersepadu program as *PPR Disewa Dasar Baru* (PPRS). In 2009, the Federal government managed to sell 62% of KL public housing to sitting tenants. This serves as an indicator that it might be difficult to sustain the highly subsidized PPR rental in the long term without gradual increments, and hence the sale of these units will transfer the high costs of maintenance to 'sitting tenants' who are themselves poor.

The Problem Statement

The direct provision of formal social housing by the government was considered a solution to combat rapid urbanization, poverty, and growing unaffordability. But it was also a solution that created the 'new' problems of urban slums. These include the emergence of dilapidated buildings, which housed a high concentration of low-income households without sufficient building infrastructure and amenities. Households' welfares can also be weakened when relocated communities experienced worst-off conditions of employment and subjected to higher travelling distances (expenses) for their daily needs. All these factors decrease the positive living conditions of social housing inhabitants-both owner-occupiers and renters.

Furthermore, the current practice of administrators seems to suggest:

1. Social housing is viewed as a 'construction' solution (i.e. based on units constructed) rather than a management responsibility by governments (i.e. within social improvement objectives with proper filtering of households and maintenance of social housing units).
2. Policies were mainly targeted to numbers built; variety and acceptable standards were secondary concerns.
3. The development perspective focused on building housing complexes; little attention was devoted to the residential environment or positive living conditions.

Within these structural contexts, we pose these questions to households in social housing units:

1. What would a satisfaction survey of the housing unit, housing complex and spatial ecosystem of households' survey disclose; based on the different densities and varieties of amenities; as well as the differences in households' ecosystem pre and post relocation?
2. What is the role of the Residents' Association in maintaining positive living conditions[9] in housing complexes?

[9] Positive living conditions is the provision of adequate shelter for households and produce no negative externalities (for example crime and health). Source: UN-Habitat (2009)

The findings contribute to the public-policy considerations below:

1. **To propose improvements to existing social housing estates**

    a) Refurbishment: what should be the priorities?
        i) Personal spaces within the housing unit
        ii) Shared spaces within the housing unit
        iii) Shared spaces within the housing complexes
        iv) Reduction/ increasing the number of units per housing complex
    b) Spatial analysis: Do they travel more than before (post-relocation) to places of employment, learning, and social activities? Do they keep their pre-relocated jobs?

2. **To propose general improvements to social housing complexes and exit policies**

    a) Refurbishment or demolition of social housing complexes—what are the current practices?
    b) What is the role of the Residents' Association in maintaining the positive living conditions in housing complexes? Does a higher concentration of families in a building complex (higher densities in social housing) matter?
    c) What is the role of local councils in managing the positive living conditions in housing complexes? Does a higher concentration of families in a building complex (higher densities in social housing) matter?
    d) What is the exit policy for households no longer eligible for social housing?

Organisation of the Report

The report is organised into 6 chapters.

Chapter 1: Housing Needs and the Provision of Social Housing in Malaysia

This chapter discusses the underlying principles for social housing provision as well as the historical development of state intervention. Some of the key distinguishing features of the social sector are illustrated; for example, the allocation of housing is according to need rather than the ability to pay; and where the price system is not the coordinating factor for supply. This renders the administrative process of defining housing needs and building standards critical-since both parameters are not determined by the price system. The risks of sub-standard homes for shelter and the exclusion/inclusion errors for the target groups are present to a substantial degree.

Chapter 2: Introducing the Case Studies: Building Design and Residents' Profiles

The case studies were selected within the structural context of rapid urbanization and the need to provide shelter for low-income group. Therefore, the selection process includes the parameters of states with higher urbanization rates and population densities. Furthermore, housing complexes were selected based on those that have been inhabited for more than 10 years as well as with higher densities (stratified buildings). This chapter describes the physical residential environment of the PPRs (i.e. levels of density, physical design and the variety of amenities that distinguishes one PPR from the other- 'site specificities') as well as the residents' demographic profile (i.e. household size and composition, as well as households' previous housing experience- prior to the relocation to the PPRs).

Chapter 3: User Satisfaction Surveys of PPRs and the Roles of Resident Associations' and the State

This chapter consists of four sections. Section 1 gives the findings from the PPR satisfaction surveys. Section 2 and 3 discusses the roles of both the resident associations and local authorities in improving living conditions. This was based on the analysis performed from structured open-ended interviews conducted with members of resident associations. Section 4 concludes with observations on several initiatives by resident associations to improve living conditions and resolve extant problems in the community.

Chapter 4: Spatial Analysis: Ensuring a Supportive Ecosystem for Households

Locational characteristics serves as an important component of housing satisfaction. Most social housing policies tend to ignore these wider aspects of spatial accessibility and connectivity to key amenities to the detriment of the quality of life for inhabitants. This chapter analyse the satisfaction level attained by residents through a) distances travelled for employment, schooling, and daily needs (current spatial ecosystem) and b) the differences of distances travelled for similar activities before being relocated (previous ecosystem). It is critical to understand social housing within the context of a wider spatial eco-system due to the critical economic and social consequences it has on the wellbeing of residents.

Chapter 5: Social Housing Exit Policies: A Case of "Nowhere to Go"?

In general terms, the PPR program accommodates the housing needs of the poor who are unable to obtain shelter through other means. However, should PPR programs be a 'permanent' method of providing shelter for the poor? Or should it be seen as a transitionary program that provides an avenue for residents with a view that once they achieved a sufficient level of income they would move elsewhere? And what should be an appropriate income level for exiting social housing programmes be? Is it depended on the rental rates in the private sector provision, or is there an 'absolute' income that renders poor households no longer 'poor'? Chapter 5 attempts to answer the above questions and considers empirically, whether PPR residents have viable options in the private market to graduate.

Chapter 6: Key Findings and Policy Recommendations

This chapter provides policy prescriptions to address the structural problems in the provision of shelter for the urban poor.

CHAPTER 01

HOUSING NEEDS AND THE PROVISION OF SOCIAL HOUSING IN MALAYSIA 13

CHAPTER 1

HOUSING NEEDS AND THE PROVISION OF SOCIAL HOUSING IN MALAYSIA

1.1 What is Social Housing?

There is a general lack of consensus for a common definition for 'social housing'. Each country has forms of housing that are broadly designed to satisfy the needs of households who are unable to 'compete through pricing' in the marketplace for housing of an acceptable standard, either for renting or ownership. Although social housing is generally equated to rental dwellings, the term is also sometimes used to describe the provision of affordable homes for sale to assist low-income households. This is referred to as asset-based welfare initiatives, where homeowners co-own with local councils until a certain period when they have sufficient funds to purchase the local council's share of the homes.

Social rented housing is often supplied by governments or non-profit agencies and rents are typically at sub-market levels. This frequently involves some form of subsidy. The legal status, the rent levels, and the extent of subsidies; this often includes demand side (such as housing vouchers) or supply side interventions (such as land leases to private housing developers) are germane to the definitions employed in different countries.

It is important for each country to precisely define the purpose of social housing. It should be clear whether it serves the purposes of assisting low-income households, assisting key workers to access the geographical labour market, boost housing supply, promote social cohesion or whether it has some other objectives[10]. However, international benchmarks for social housing policies appear to support the following guidelines[11]:

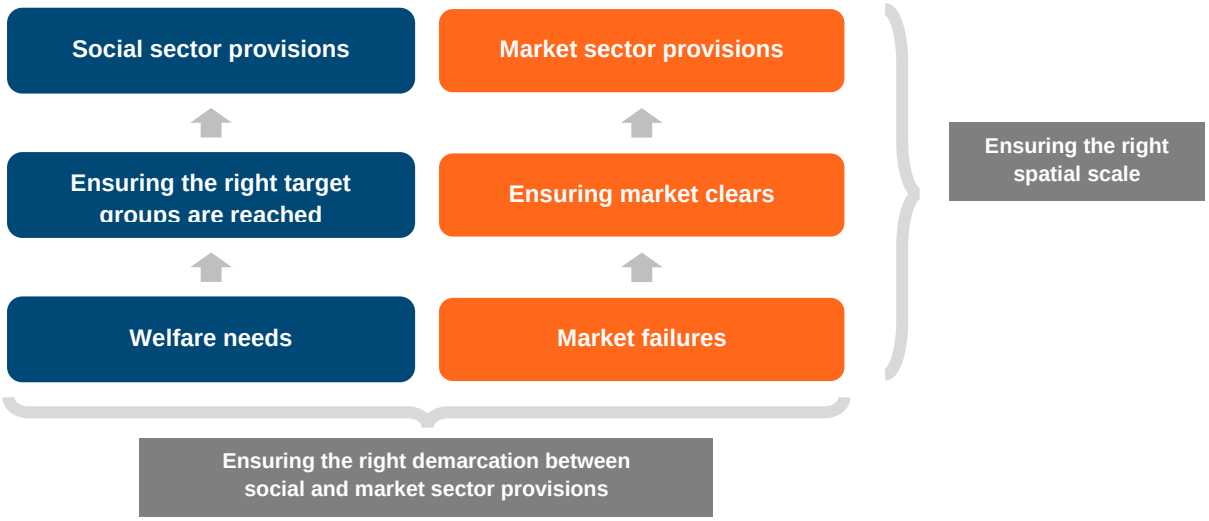
1. Decent lives for people in need despite higher living costs.
2. Transition homes for the underprivileged.
3. Affordable, integrated (as opposed to segregation of the poor) and well-maintained housing estates.
4. Security of tenancy and stability; for people in need to:
    a) support a good quality of life;
    b) provide a platform for people to take up education and employment; and
    c) facilitate a transition from social housing to affordable housing or tenancy in the private rental market.

[10] The lack of a 'uniform' definition or objectives stems from the different purposes of social housing to each country. See Oxley (2004), Angel (2000), UN-Habitat (2009).

[11] Government of Western Australia (2017), New South Wales Government (2015), Peter (2018)

The key distinguishing feature of social housing is that it is allocated outside of market mechanisms, according to need rather than the ability to pay. This means that the administrative process driven by policy decisions are used to allocate dwellings, and therefore access to this accommodation depends on how needs are defined and interpreted. Once these needs are clearly articulated; say for example to assist those in the low-income sector or facilitating keyworkers to live in the inner city, then it is easier to estimate the number of households that fall into this category.

Figure 1.1: Distinction between social and market sector housing provision



Source: Suraya Ismail et al. (2019)

Figure 1.1 is illustrative of the main differences between the provision of housing for social and market sectors. The social sector caters for welfare needs and therefore the eligibility for the 'target group' is the main criteria for the allocation of housing units.

The other important policy consideration is to ensure the right spatial scale for the houses built. The spatial scale involves the analysis of households within the ecosystem of their homes, workplace, public amenities, and places for social interaction. It has been argued that policies directed towards addressing minimum requirements for basic consumption were inadequate and that in addition to food, shelter and clothing; people needed support in making a living as well as access to decent services, health care and education[12]. For the urban poor, having these amenities nearer to home would be an added advantage and contribute to more positive living conditions.

[12] Fox and Goodfellow (2016)

Criticisms levelled towards alleviating the plight of the poor based on minimum requirements reveal how simply meeting basic needs neglects the community's social and psychological wellbeing[13]. Social housing programs often situate low-income households with housing needs together, isolating them from other income groups. Neighbourhoods whose residents are mostly low-income households suffer from social segregation[14]. This can result in concentrated poverty where residents have poor access to jobs, public transit and social services[15].

For developed countries where informal markets are almost non-existent, the allocation of social housing is quite straightforward. However, in emerging and developing countries where informal settlements are burgeoning, governments need to decide whether the solution would be to relocate informal settlements to formal social housing complexes (for example in Malaysia and Turkey) or to supply public amenities to these informal settlements (for example in Thailand and Indonesia).

Therefore, the case for the provision of social housing depends on two propositions[16]:

1. that market forces will not result in acceptable housing standards for all the population, especially those in need; and
2. improving the housing standards of those who are living in sub-standard accommodation is better done through the direct provision of housing rather than providing additional financial resources to the poorly housed.

These propositions are contestable because they need to be tested within the prevailing circumstances of a country. The two underlying concepts are housing needs and acceptable housing standards**.** The second proposition is even more problematic if those living in sub-standard accommodation (i.e. the 'poorly-housed') do not own the property rights to their homes. This is especially true in the case of squatter settlements. The two underlying concepts are described in Section 1.1.1 and 1.1.2 below. These propositions are revisited in the recommendations of this report.

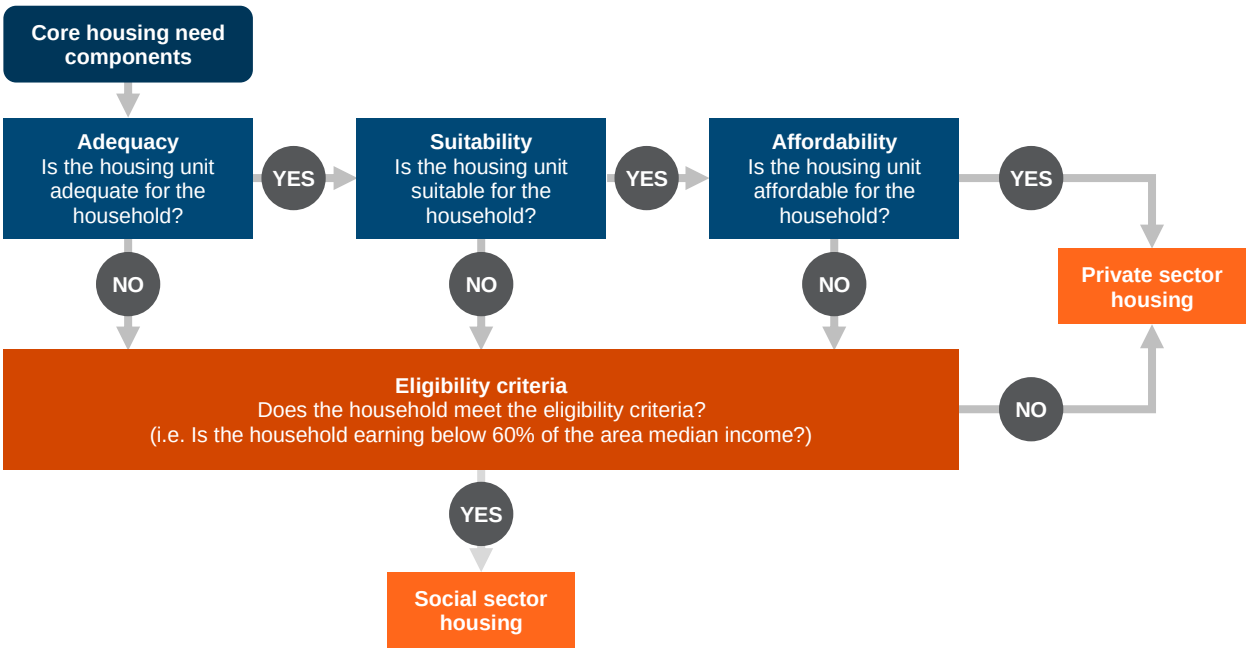
1.1.1. Housing needs

Social housing systems allocate dwellings according to need rather than effective demand. These are two different constructs. For effective demand, dwellings are normally sold to individual households according to a price mechanism. The allocation of the housing unit is through the price system. Housing need, on the other hand, can be met by either the private sector or the government but the allocation is based on the individual households' needs, without them paying the full market price.

As mentioned in the previous chapter, there is a need to estimate the size of the social housing sector in order for local governments to be more informed when planning solutions for this segment. The estimation for the social sector must go beyond the current use of just the open registration system. Local governments must undertake a comprehensive study of their local housing markets to gain a better understanding of households that fall under the needs criteria in their local area. We suggest the following filtering criteria as shown in Figure 1.2.

[13] Hulme and McKay (2005). More detailed arguments can be found in Sen's 'capabilities'. Source: Sen (1999)
[14] Grodach and Ehrenfeucht (2016)
[15] Grodach and Ehrenfeucht (2016)
[16] UN-Habitat (2009)

Figure 1.2: Estimation of core housing need



Source: Suraya Ismail et al. (2019)

1.1.2. What are acceptable standards?

A need for housing is a socially determined requirement for accommodation[17]. Aggregate need can be defined as "the quantity of housing that is required to provide accommodation of an agreed minimum standard and above for a population given its size, household composition, age distribution etc., without taking into account the individual household's ability to pay for the housing assigned to it."[18]

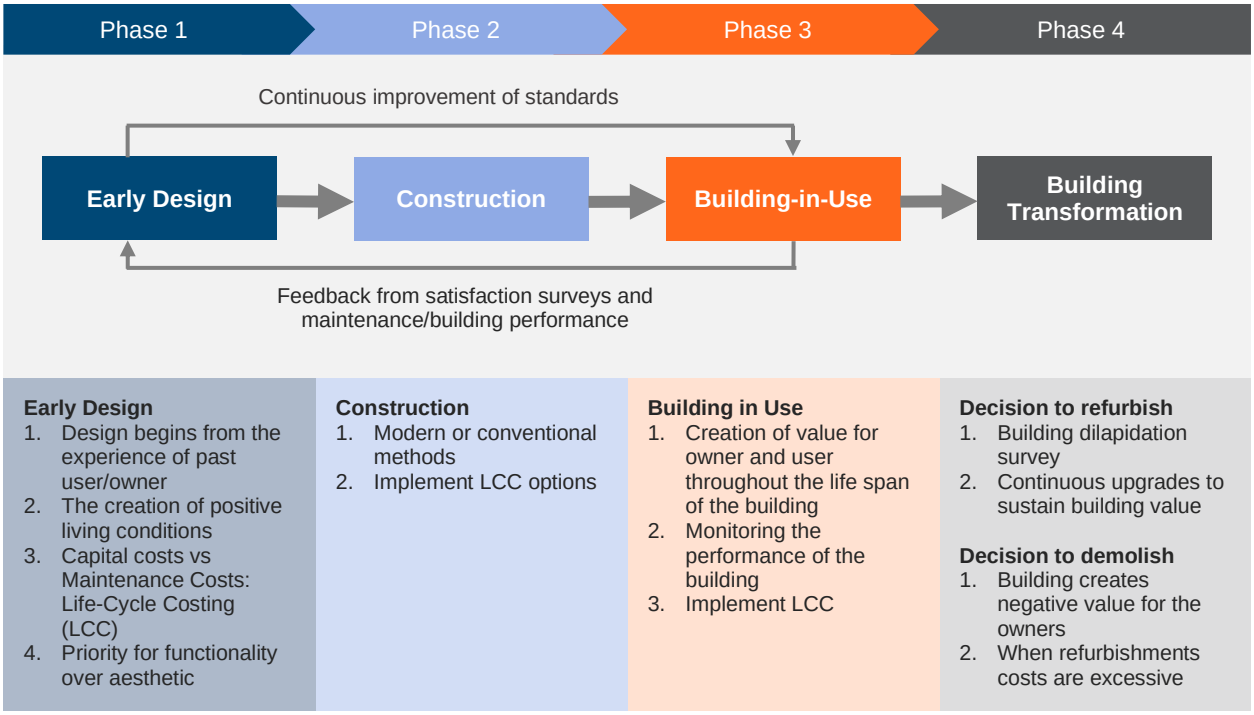
The 'agreed minimum standard' should be such that housing above this standard, which we may call 'decent housing', is the only form of housing acceptable. Decent housing would provide for adequate shelter to households and produce no negative externalities. That is, it would impose no external costs on the community in terms of, for example, crime and health[19]. In this sense, there are no 'absolute' housing standards.

[17] Oxley (2004)
[18] Robinson (1979)
[19] Oxley (2000)

Governments need to set standards of sufficient 'good quality' for its citizens. There are several instruments that the governments can utilize in order to create these standards: for example, scientific physical environment analysis, building maintenance costs, residents' satisfaction surveys and user post-occupancy evaluations (POE). The parameters involved in the design of buildings should not just be limited to the design of the housing units, but also the surrounding amenities (or shared spaces) in the neighbourhood. These findings can be further refined by incorporating local population social norms and cultural habits to better comprehend the parameters involved in creating 'decent' living conditions. All these steps will lead to better-designed housing complexes by continuous improvements of building standards through a combination of scientific and perception studies.

Figure 1.3 is a conceptual construct of embedding the continuous improvements of housing standards into the building redevelopment framework. It consists of 4 phases: *Early Design, Construction, Building-in-Use* and *Building Transformation*.

Figure 1.3: Building Redevelopment Framework



The development of social housing ideally must take into consideration the motivation to create value for both owner and user during the lifespan of the building. Therefore, the *Early Design* phase begins with the collection of inputs from user satisfaction surveys and technical assessments of building performance for designs to be, first, able to satisfy the functional requirements of households, and second; can be maintained at a relatively reasonable cost.

The continuous improvement of housing standards will arise from the interplay of *Early Design* and *Building-in-Use*. This iterative process can be achieved through professionals' technical inputs and a comprehensive analysis of the occupants' profiles, reflecting their needs; for example, attending to physical frailty and impairment.

These standards and regulations must be updated regularly, specifying characteristics such as the minimum amount of gross floor area (GFA), ventilation rates or daylight access percentages[20]. This iterative process is different from the current linear process in devising building standards, where there is no feedback loop into the design process from the perspectives of users and owners of the buildings.

In many parts of the world, building regulations have been updated continuously in response to low-quality housing. Continuous research has been carried out on the effects of indoor environment quality on health and wellbeing, frequently in combination with the type of housing[21]. Housing satisfaction surveys from house owners/renters were also conducted to constantly improve building standards. Both types of studies; scientific building testing and user's perspectives, can contribute to major building transformations projects (Refer to Box 1.1).

There appears to be a misalignment of financial incentives between parties involved in the funding of the building (capital costs) and the management (maintenance costs) of the building. This is because social housing is built by funds from the Federal Government, but the maintenance costs are borne by Local Councils. If the capitals costs are low due to poor-quality materials and design, then normally, the maintenance costs would be higher. Financial incentives can be better aligned with a Life-Cycle-Costing (LCC) method. The costs of constructing the building (Capital Costs) and the attendant costs of maintenance (Maintenance Costs) will be transparent for both parties. Decisions on LCC could be executed during the *Early Design* stages of the building process and followed through into the *Construction* and *Building-in-Use* phases.

More often than not, some buildings might need to go into the *Building Transformation* phase. Positive residential environments depend on both, the efficient functionalities of the families and communities. Community associations play an important role in attempts to revitalize housing complexes in ensuring the outcomes of the process will be positive to residents. Neighbourhood revitalization programmes tend to have a higher propensity to be more successful and sustainable when there is community participation (a bottom-up approach) in strategizing initiatives to improve residents' living conditions[22].

An earlier KRI report[23] highlighted several well-meaning initiatives to improve living conditions in an area may fail if residents themselves are not given the opportunity to create and manage the initiatives. It has been suggested that community-led initiatives should be the focus of neighbourhood revitalisation efforts to address interconnected challenges other than income and employment for the poor[24]. Many successful redevelopment programs opted for a bottom-up approach in their models. Therefore, social housing policies should also focus on the empowerment of communities so that residents will be able to participate and provide input to revitalization initiatives into their own housing complexes.

[20] Coad (2006), Neufert et al. (2012)
[21] Appold and Yuen (2007); Lee et al. (2012)
[22] For example, the Asian Coalition for Community Action (ACCA) program operated by the Asian Coalition for Housing Rights (ACHR) and the Baan Mankong (Secure Housing) Collective Housing Programme by Thailand's Community Organizations Development Institute (CODI). Source: ACHR (2014), CODI (2012).
[23] KRI (2017)
[24] Grodach and Ehrenfeucht (2016)

Box 1.1: Building transformations

A social housing example that tries to meet new quality standards is Pruitt-Igoe in St. Louis, Missouri, USA. This project was completed in 1955 with the objective of replacing the inner-city slums of St. Louis. It was designed with 'modernism' in mind, a housing complex with 33 buildings of single loaded corridor apartments. The demolition of the buildings came only 18 years after its completion, due to the deteriorating condition of the building as well as rising criminality[25].

Another example would be the pre-mature demolition of 'De Bijlmer' in the Netherlands. The reasons gave for the failure of such buildings were, amongst others, the single load corridors design, the displacement of families breaking the existing social cohesion and the lack of maintenance of the new buildings[26]. It appears the social and psychological effects of housing and the neighbourhood environment seem to be more easily overlooked when there is an urgent need to build new social housing[27].

Denmark have taken steps to ensure their public buildings adhere to their latest building standards and perform building condition surveys every 5 years. Similarly, Norway provided a pathway through 'building-in-use' surveys for their initiative 'Good Buildings for a Better Society'[28].

1.1.3. Malaysian housing standards

Malaysia has also revised its national housing standards, with its latest revision published in 2019, known as Construction Industry Standard (CIS) 26: 2019 National Housing Standard. The standards were designed based on five parameters, namely design, public amenities, basic infrastructures, comfort and safety, and sustainable development. The new minimum GFA was set at 800sqft, higher than the GFA of PPR units by 100 – 150sqft.

Table 1.1 compares the revised 2019 standards with existing PPR units. It suggests that PPR residents are deprived of good quality housing standards where the majority of requirements were not met except for toilet, living and dining hall standards. However, it is important to note that the existing PPR units followed the then acceptable standards and design specifications outlined in the CIDB National Housing Standard for Low-Cost Housing 1998.

The focus of Malaysian housing standards has always been on the building and construction specifications of new dwellings. The standards do not outline guidelines as a benchmark to upgrade the quality of existing housing stocks nor does it define suitable occupancy levels in ensuring overcrowded conditions are avoided[29]. This was also highlighted in KRI's *Rethinking Housing* report, which emphasizes the need to develop "Good Quality Housing Standards".

[25] Jencks (1977). Due to its sheer size and the failure of the buildings' performance, it was dubbed 'Death of Modernism'.
[26] Newman (1972), Sommer (1974)
[27] Overtoom et al. (2019)
[28] Ministry of Local Government and Regional Development (2012)
[29] Suraya Ismail et al. (2019)

'Space standards' along with planning, design and technical construction standards are important elements in achieving good quality housing standards[30]. However, this section will focus extensively on the 'space standards' as it is crucial in tackling the overcrowding conditions faced by some PPR residents.

'Space standards' refer to a framework which determines the appropriate amount of space afforded[31]. They include the acceptable minimum floor area of bedrooms, minimum height of a living room, among others. Developing appropriate space standards is critical in ensuring the comfort level of each occupant in a dwelling is sufficient and enables them to engage in a decent standard of living, for example, having sufficient space for sociability and leisure in addition to accommodating other needs e.g. storage. Moreover, inadequate space may impose detrimental effects on occupants, including affecting their physical and psychological health, educational attainment of their children due to lack of space to study, and lack of privacy may further weaken their family ties[32].

Table 1.1: A comparison of PPR building plan standards with the revised National Housing Standards 2019

Unit specification	National Housing Standard 2019	PPR Building Plan 1998	Standard met
Overall unit	74.32m² (800sqft)	49.7 – 60.385m² (535* – 650sqft)	No
Room 1	11.2m² (120sqft)	10.821m² (116.48sqft)	No
Room 2	9.6m² (103.3sqft)	6.671m² (71.8sqft)	No
Room 3	6.6m² (71sqft)	6.505m² (70sqft)	No
Toilet 1 (with bathroom)	2.8m² (30.1sqft)	3.071m² (33sqft)	Yes
Toilet 2	2.4m² (25.8sqft)	Unknown	-
Kitchen	8.32m² (89.6sqft)	4.515m² (48.6sqft)	No
Dining & living hall	17.92m² (192.9sqft)	24.194m² (260.42sqft)	Yes
Dry area	3.06m² (32.9sqft)	2.902m² (31.23sqft)	No
Utility area	2.88m² (31sqft)	1.706m² (18.36sqft)	No
Car parking area	1 lot for unit <92.9m² (1,000sqft) 10% of number of units for guest parking		NA
Motor vehicles parking area	1 lot for every 2 units		NA
Ceiling height	Not less than 2 metre (6.56 ft)	2.134 metre (7 ft)	Yes

Note: *The layout for PPR Jalan Sungai is slightly different from the PPRs in Kuala Lumpur. The unit size is 535 sqft.
Source: CIDB (2019) and DBKL (2018)

[30] Nor Haniza Ishak et al. (2016)
[31] Nor Haniza Ishak et al. (2016)
[32] RIBA (2015)

1.1.4. Good quality standards for public health and the wellbeing of families

The Movement Control Order (MCO) has led to major sectors of Malaysia's economy shutting down or scaling back in a nationwide effort to reduce the rate of transmission of the novel coronavirus. However, one segment of the population perhaps most susceptible to the adverse economic effects of the pandemic is the urban poor—those with the lowest paying jobs and the fewest financial resources, coupled with living in high-density areas and overcrowded flats which increase the risk of infections.

Poor housing environments paired with overcrowding conditions are commonly associated with higher rates of diseases. Neiderud (2015) has discussed in detail how risk factors in the urban environment (i.e. poor sanitation, waste management, inadequate ventilation) contribute to vector proliferation and spread of diseases[33]. To make things worse, high-density infrastructures (which are common for PPRs in urban areas) increase the probability of transmission simply because of the sheer magnitude of people confined within that area, thus increasing the likelihood of close contact. Similarly, residents are also limited to using the same common facilities (such as sharing 3 lifts for one block of about 316 units).

A typical PPR in Kuala Lumpur consists of at least 316 units per block with 17 floors. If the average household size is 4.5[34], then assuming if all units are occupied, approximately 1,455 people would be crammed all together in one building. Indeed, a study modelling the influenza transmission in Delhi found that areas with 'slum neighbourhood characteristics' (e.g. population density and estimated contact rates) significantly associated with the larger epidemics earlier peaks[35].

Another concern during the MCO is the effect on the mental and physical health of the residents confined into a small space for long periods. We estimated that about 14% of households in the PPRs live in overcrowded conditions. The organisation Shelter, has aptly described the impact of overcrowding on families:

"Living in cramped conditions can have a detrimental effect on children's health, education, and general well-being. Overcrowding can increase the spread of illness and cause unsettled sleep patterns. It impacts privacy for all family members and can make it harder for children to find a quiet space to read or do their homework. It can also affect the quality of relationships between parents and children, and between siblings."

Shelter (2005)
Full house? How overcrowded housing affects families

[33] Neiderud (2015)
[34] This is based on the survey done by the team.
[35] Chen et al. (2016)

1.2 The Development of Public and Social Housing in Malaysia

1.2.1. Introduction

Prior to Independence, public housing in Malaysia was known as 'institutional quarters' and intended for government officials. However, after Independence, the government introduced a home-owning policy with the objective of providing housing for all segments of society. One of the initiatives was the implementation of the Public Low-Cost Housing (PLCH) program, targeted at rural poor households earning monthly incomes below RM300[36].

The literature on housing development in Malaysia shows the existence of squatter settlements prior to Independence as well as emerging rural-urban migration among the rural population. This was largely driven by employment opportunities in the urban belt[37]. Additionally, the rapid increase in urban populations following the implementation of the New Economic Policy (NEP) in 1970 coupled with corresponding changes in Malaysia's economic structure from agriculture to industrialization further increased housing needs in urban areas. This increased demand was particularly evident amongst the low-income groups.

Despite being the main agenda on Malaysia's housing provision programmes, as laid out in various Malaysia's 5-Year Plans, PLCH seems to have been unsuccessful in addressing the rising demand for affordable housing. Inadequate affordable housing supply resulted in the expansion of slum and squatter settlements[38]. Most urban citizens struggled to afford the expensive prices of private housing. It appears that this applied similarly to PLCH[39]. As a result, the government responded to the problems of squatter settlements by initiating social renting.

The following subsections in this chapter will briefly describe the development of social housing in Malaysia.

1.2.2. The implementation of the New Economic Policy (NEP)

The implementation of the NEP was driven by the 1969 riots, which created awareness of the struggles encountered by three major races in Malaysia, including income and wealth disparities as well as racial stratification by social and economic function[40]. This was essentially a legacy of colonial policy. Thus, the NEP served two main objectives which were 1) to facilitate national unity via poverty eradication, irrespective of race and 2) to restructure society, ultimately eliminating racial identification with economic function and geographical location[41].

[36] Razali Agus (2002)
[37] Wegelin (1978)
[38] Tan (2011)
[39] Nurizan Yahaya (1989), EPU (1976) and EPU (1991)
[40] Wegelin (1978), Razali Agus (2002)
[41] Razali Agus (1989)

Residential patterns tend to be divided along racial lines that carry important cultural, religious and political significance. The apparent spatial segregation and population density by race were attributed to immigration patterns and the colonial past which were largely retained in the post-colonial state[42]. The Chinese dominated urban areas (as they were actively involved in mining and other economic activities), the indigenous Malays mostly resided in rural areas (*kampung*) participating in subsistence agricultural e.g. small-scale farming etc, whereas the majority of Indians (mostly intended as migrant labourers by colonial authority) lived and worked as menial workers in rubber and oil palm estates[43].

The NEP as well as the Kuala Lumpur Structure Plan 1984 were aimed at reducing the existence of mono-racial communities in urbanized settings which followed colonial designs during the occupation of Peninsular Malaya. The more prosperous colonial urban centres proved of tremendous benefit to their inhabitants in the creation of better incomes and wealth accumulation. The post-colonial government developed rural to urban migration policies with the goal of overcoming existing economic and social inequities which was seen as critical factors in the maintenance of peace and political stability.

1.2.3. Malaysia's economic transition to industrialisation

At the same time, Malaysia was experiencing a major economic transition from agriculture to industry. Agriculture has been historically the dominant contributor to the country's economic growth. However, its share in terms of national Gross Domestic Product (GDP) coupled with total employment gradually declined over several decades and was subsequently overtaken by the growing industrial sectors during the 1970s[44]. Concurrently, the demand for services also grew to support the industrial sectors. The employment share attributed to agriculture dropped from 52.8% in 1970 to 16.7% in 2000, coinciding with the increasing share of employment in both the industrial and services sectors[45].

National GDP figures show that Malaysia experienced considerable economic growth during its industrialization era (1970s to early 2000s). Real GDP registered an almost eight-fold increase from RM69b in 1970 to RM555b in 2002[46]. In addition, similar improvements were observed in Malaysians' wellbeing. The monthly median household income recorded a three-fold increase from RM711 in 1970 to RM2,466 in 2002[47]. Moreover, life expectancy increased and mortality rates among children decreased.

[42] Wegelin (1978)
[43] Tan (2011)
[44] KRI (2018)
[45] KRI (2018)
[46] KRI (2018)
[47] KRI (2018)

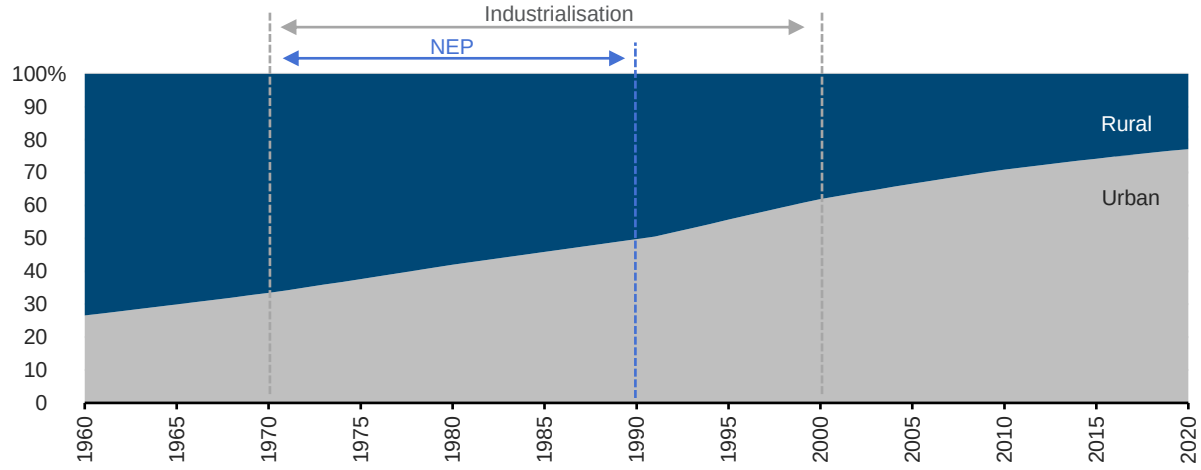
1.2.4. Increasing trends of rural-urban migration and urbanisation

Malaysia's economic transformation has undoubtedly accelerated the country's rate of urbanization. The concentration of economic activities in urban areas encouraged the migration of rural residents who were attracted by potential economic benefits. These included an abundance of employment opportunities with relatively higher incomes, along with the provision of other social services such as education and healthcare.

Figure 1.4 depicts the proportion of Malaysians living in urban and rural areas from 1960 to 2020. The rising trend of rural-urban migration is evident, with the share of rural population shrinking over time, coinciding with a reciprocal increase in the share of the urban population. The level of urbanization has more than doubled since 1970, increasing from 33 % to 77% in 2020[48].

However, it is important to recognize that the high population growth in the major cities was also driven by an increase in the migration of population from smaller towns and cities, also known as urban-urban migration. For example, the migration of urban residents from Selangor and Negeri Sembilan to Kuala Lumpur, was a significant cause in the conurbation of Klang Valley. Rimmer and Cho (1981) highlighted that urban-urban migration among Malays was driven by two major factors which were 1) civil servant transfers and 2) increased educational opportunities. Rimmer and Cho (1981) opined that the population "gains" in cities such as Port Dickson and Kuantan were possibly due to transfers obtained by the growth of public administration and security services such as the armed forces and the police. Additionally, the concentration of higher learning institutions in Klang Valley also attracted youths from other major cities, along with the availability of job opportunities for graduates[49].

Figure 1.4: Urban and rural population in Malaysia, 1960 – 2020



Source: CEIC (n.d.)

[48] The increase in urbanization levels needs to be interpreted along with the changes in the definition of urban areas. Prior to the change in the 1991 Population and Housing Censuses, urban areas were defined as gazetted town areas with populations of 10,000 or more. The 1991 census re-defined urban areas as gazetted areas and their adjoining built-up areas with combined populations of 10,000 persons or more. Built-up areas were defined as areas contiguous to a gazetted area and had at least 60% of their population (aged 10 years and over) engaged in non-agricultural activities as well as having modern toilet facilities in their housing units. The Census 2010 further re-defined built-up areas as areas contiguous to a gazetted area and had at least 60% of their population (aged 15 years and over) engaged in non-agricultural activities. Source: DOS (2011).

[49] Peng (2012)

It is also important to recognise that the NEP played a pivotal role in supporting rural-urban migration, especially amongst the Malays and other indigenous (Bumiputera) communities as the government provided opportunities to participate in urban activities[50]. This has reflected in the increased share of the Malay/Bumiputera population in urban areas, reaching almost 48% by 2000. Table 1.2 details the percentage of urban residents by ethnic groups between 1957 to 2000. The declining share of Chinese urban population implies that the government has ultimately accomplished the NEP's objective of aligning racial composition in urban areas to reflect the composition of the national population.

Table 1.2: Total urban population by ethnic composition in Malaysia, 1957 – 2000

	1957	1970	1980	1991	2000
Malays/Bumiputera*	21.0	27.6	37.9	45.3	48.3
Chinese	62.6	58.5	50.3	39.8	34.8
Indians	12.8	12.8	11.0	11.0	11.0
Others	3.6	1.1	0.8	1.2	0.1
Other Bumiputeras				0.4	0.7
Non-Malaysian Citizens				2.3	4.3

Note: The figures reported only include Peninsular Malaysia. The Bumiputera category for period between 1957 – 1980 includes Other Bumiputera as well.
Source: Usman Yaakob, Tarmiji Masron, and Fujimaki Masami (2012)

Moreover, unprecedented urbanization rates also created substantial changes to the urban geography. Existing urban centres expanded new towns and cities emerged surrounding larger metropolitan areas, such as for example, Shah Alam, Senawang, Skudai and Bandar Bayan Baru[51]. It has been estimated that the number of urban centres has increased nearly three times, from 55 in 1970 to 170 in 2000[52].

1.2.5. Housing needs in urban/dense areas

The migration to urban centres as well as the changes made to the definition of urban areas led to an increase in urban population growth. As demonstrated in Table 1.3, the urban population grew by 591% over the last six decades, representing approximately 21 million urban residents.

Table 1.3: Total urban population and growth of the urban population, 1970 – 2020

Year	Urban population	Growth per decade (%)
1970	3,614,414	
1980	5,801,271	61%
1990	8,977,771	55%
2000	14,375,102	60%
2010	20,002,877	39%
2020	24,973,604	25%

Source: CEIC (n.d.) and KRI calculations

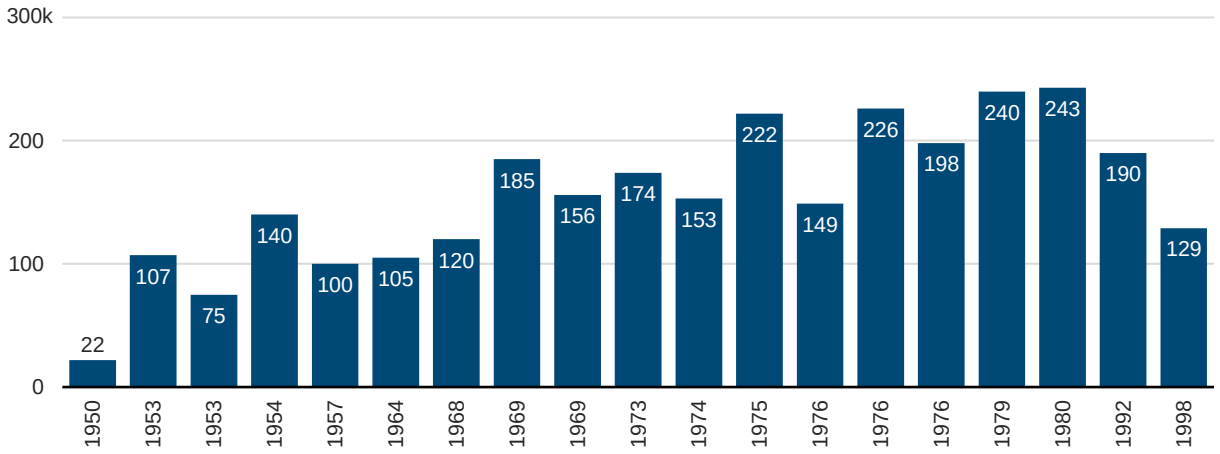
[50] Razali Agus (2002)
[51] Razali Agus (2002)
[52] Usman Yaakob et al. (2012)

Such an unprecedented level of growth resulted in some cities struggling to meet the resulting infrastructure demands of their populations, including the need for affordable housing. Although housing needs were addressed in Malaysia's 5-Year Plans through numerous housing programs, housing shortages persisted[53]. This was possibly due to lower rates of completion of PLCH units than what was targeted in the 5-year plans[54].

Furthermore, many in the low- and middle-income brackets struggled financially to afford a house. It is pertinent to note that not all urban migrants were able to acquire the purported economic benefits of inhabiting major urban centres. Many were unable to procure a job due to "low absorptive capacity" of some industries, eventually leading them to opt for informal or low-income jobs[55]. Additionally, the policy of prioritizing PLCH units for public servants also hindered these vulnerable groups from accessing affordable housing[56].

Shortages of affordable housing coupled with financial constraints ultimately contributed to increased urban squatting. The affected newcomers opted for cheaper housing options either by residing in existing squatter settlements or creating new squatter settlements at the peripheries of cities. The majority of these settlements were located in primary economic growth centres like Kuala Lumpur and Selangor and in secondary cities such as Alor Setar and Kuantan. They were mostly found along railway lines, on flood plains, and on disused mining land[57], and often characterized by high-density and inadequate amenities.

Figure 1.5: Total squatter population in Kuala Lumpur, 1950 – 1998



Note: Estimates vary according to data published in several sources.
Source: Johnstone (1981) and DBKL (2004)

[53] Syafiee Shuid (2016), Tan (2011)
[54] Razali Agus (1989) and EPU (Various years)
[55] Razali Agus (2002)
[56] Syafiee Shuid (2016), Wegelin (1978)
[57] Johnstone (1981)

Figure 1.5 shows the estimated number of squatters in Kuala Lumpur. It can be seen that the squatter population increased drastically post-Independence, particularly during the NEP period. In 1975, approximately 30% of the total population in Kuala Lumpur (approximately 222,000 people) were squatter tenants. Statistics show that the number of squatter settlements in Kuala Lumpur increased from 32% in 1968 to 37% in 1971[58]. As of 1998, Kuala Lumpur recorded 197 squatter settlements, occupying approximately 645 hectares[59]. A decline in squatter settlements was observed post-1990 and is partly due to the government's initiative to relocate residents, as explained in the next subsection.

1.2.6. Housing initiatives/provision

The Housing Trust was established in 1952 by the then colonial administration to oversee Malaya's housing development. It was also in charge of providing public housing (i.e. institutional quarters) to public servants, who were predominantly British. In the 1950s and 1960s, the Housing Trust was the primary provider of low-cost housing with the public sector taking the lead in providing housing for low-income groups. The Housing Trust was dissolved in 1976 and its functions taken over by Jabatan Perumahan Negara (JPN)[60].

As described in Malaysia's Five-Year Plans (MP), there were continuous attempts to implement new schemes to address societal housing needs, as demonstrated in Table 1.4. Although each Malaysia Plan's housing provision objectives varied slightly, the overarching objective was to provide adequate, affordable, and quality housing while attempting to ensure the needs of all segments of the population were met.

Housing provision in Malaysia began in post-colonial period with the development of independent quarters for public sector employees and low-cost housing for those who could afford to purchase homes. In rural areas, housing provision was conducted via land development schemes. The public sector was the major provider for low-cost housing whereas the private sector was largely involved in providing medium- and high-cost housing.

However, from MP4 onwards, the role of the private sector in housing development gradually expanded and began to encompass low-cost housing projects. The government imposed a quota for the private sector's mixed housing development projects, requiring that 30% of units constitute low-cost housing. Moreover, several initiatives including the relaxation of laws and regulations and the establishment of local agencies to facilitate the approval of applications were developed to encourage the private sector to develop low-cost housing projects.

Urbanisation and land utilisation for other economic activities led to a problem of land scarcity. The government responded by introducing high-rise, low-cost housing based on a condominium concept in the MP4 as an effort to optimize land use and reduce construction costs.

[58] Ayu Abdullah Yusfida et al. (2017)
[59] DBKL (2004)
[60] Shuid (2010)

The high costs of living in urban areas exerted tremendous financial pressures, leading to a significant proportion of residents struggling to even afford low-cost housing priced at approximately RM25,000 and below. Therefore, the government recognised the need to introduce rental schemes to assist struggling urban residents to access affordable housing. Low-cost housing projects for rent were implemented alongside ownership schemes in MP5. Additionally, MP5 also introduced housing projects based on the concept of 'human settlement', which includes the provision of basic infrastructure and social facilities including schools, clinics and community halls to assist residents in carrying out their daily routines.

Home ownership programs became prioritised in MP6 and onwards. In addition to low-, medium-, and high-cost housing projects, a new category was introduced in MP6, namely low-medium cost housing, to create opportunities for lower-middle income groups to own their homes. Innovative construction methods were also utilised more extensively with the incorporation of prefabrication or industrialised building systems into housing development projects as incentivised by the government.

As mentioned earlier, urban squatting increased following high urbanisation levels. Therefore, the government relocation programme was introduced to eliminate squatter settlements by 2005. Squatter tenants were given options to either buy or rent existing low-cost housing units or be temporarily placed in transit houses before being relocated to future low-cost housing projects. Programmes such as *Program Perumahan Rakyat Bersepadu*, (later replaced by *Program Perumahan Rakya*t (PPR)), were introduced in 1998 to achieve this objective.

More recent MPs introduced several affordable housing projects designed to address either both perceived shortcomings of prior approaches or the emergence of more recent concerns. Some notable projects include *Perumahan Rakyat 1 Malaysia* (PR1MA), *Perumahan Penjawat Awam 1 Malaysia* (PPA1M), *Rumah Wilayah Persekutuan* (RUMAWIP), PPR and *Rumah Mesra Rakyat 1 Malaysia* (RMR1M) as well as housing projects for second generation FELDA and FELCRA settlers. Approximately 808,000 units of low-cost affordable housing were provided between 1990 – 2009[61].

In the recent MP12, financing was seen as the major tool to drive the national homeownership agenda and tackle the ongoing housing affordability issue. This includes provision of financing facilities for first time home buyers and the expansion of the Rent-to-own programme (RTO) for the Bottom 40% (B40) and Middle 40% (M40) community. MP12 also highlights the emphasis towards improving the governance, standards and regulations related to housing with initiatives such as the establishment of a data centre on housing to bridge the existing data gap, the enforcement of *Piawaiaan Perumahan Berkualiti* (PBB) to ensure the delivery of good quality housing as well as Residential Tenancy Act to regulate the tenants' rights amongst others. Additionally, a housing redevelopment guideline will also be formulated using a public-private partnership model to rebuild public housing especially dilapidated flats, and old or abandoned government quarters.

[61] EPU (2010)

Table 1.4: Summary of Malaysia Plan objectives and housing initiatives

Malaysia Plan	Objectives and housing initiatives
First Malaysia Plan (MP1), 1966 – 1970	• To promote the welfare of the low-income groups by continuing the development of low-cost housing projects.
Second Malaysia Plan (MP2), 1971 – 1975	• To expand PLCH projects to reduce squatter settlements and urban slums, working towards achieving NEP objectives • Government to focus on the provision of low-cost housing whereas private sector will address the housing demand for middle-income and high-income groups. • Federal and state agencies like FELDA, FELCRA and SEDCs to supplement the public housing programmes of housing ministry.
Third Malaysia Plan (MP3), 1976 – 1980	• To improve the urban poor's real income via the provision of low-cost housing and other public services. • To engage in joint venture schemes with private developers to accelerate the construction of low-cost housing, with government assistance. • To encourage the growth of residential patterns in housing estates to represent the ethnic composition in Malaysia, along with the provision of recreational facilities. • To improve rural living conditions via various public and private housing development schemes, including land development schemes. • Public sector housing programmes to be classified into three major types of schemes: PLCH, institutional quarters and commercial housing.
Fourth Malaysia Plan (MP4), 1981 – 1985	• To provide housing access for every Malaysian by accelerating the construction of low-cost housing in urban areas and low-cost houses in land development schemes prevalent in rural areas. • To improve the housing quality in existing villages and providing adequate amenities e.g. water supply, electricity and sanitation facilities. • To develop low-cost housing schemes based on the condominium concept with the objective of optimizing land use (urban areas) and upgrading quality of life. • The public sector remains as the major provider for low-cost housing. The private sector is required to allocate 30% – 50% of its housing projects for the development of condominium concept of low-cost housing. • Other efforts include 1) establishing State Liaison Committee in each state to implement low-cost housing schemes and 2) to introduce time and cost-effective prefabrication or industrialised system of construction in low-cost housing schemes.
Fifth Malaysia Plan (MP5), 1986 – 1990	• To develop housing provision based on rental concept in addition to the current ownership housing schemes. • To develop housing projects based on the human settlement concept while emphasizing the provision of social facilities like school, clinic and community halls in addition to basic infrastructures. • To reduce the role of public sector in housing provision by increasing the participation of private sector in housing development projects. • Other efforts include reviewing existing law and procedures with regard to construction, to enlarge rental scheme and conduct R&D in housing construction. Also, to derive a National Housing Policy. • Private sectors greatly involved in *Program Khas Perumahan Kos Rendah* (PKPKR), introduced in 1986, due to various benefits offered by the government.
Sixth Malaysia Plan (MP6), 1991 – 1995	• To emphasize home ownership for various income groups while ensuring house price is affordable. To ensure low-cost housing is priced within RM25k per unit. • To continue encouraging private sector to engage in low- and low-medium cost housing projects. • The implementation of squatters' relocation programme. The squatters given choices to either buy or rent existing low-cost housing units or to be placed in temporary houses before being relocated to future low-cost housing projects.

Malaysia Plan	Objectives and housing initiatives
	• Types of programmes implemented: *Program Perumahan Awam Kos Rendah* (PAKR), *Program Pertapakan dan Kemudahan, Program Pengumpulan Semula Kampung Tradisional, Program Pemulihan Rumah dan Kuarters* for public servants.
Seventh Malaysia Plan (MP7), 1996 – 2000	• To provide adequate, affordable and quality housing, either to be owned or rented by all Malaysians. • Greater emphasis on low-medium cost housing to create opportunities for lower-middle income groups to access affordable housing. • Private sector to continue developing low and low-medium cost housing. • To increase access to financing by allowing the withdrawal of 30% of buyer's Employees Provident Fund (EPF) to either purchase or build house or to settle housing loans. • A special program for low-cost housing namely *Program Perumahan Rakyat Bersepadu* (PBRB) implemented in 1998 with the objective to relocate all squatters in urban areas in Kuala Lumpur and other major cities.
Eighth Malaysia Plan (MP8), 2001 – 2005	• To continue the development of low- and low-medium cost of housing by both public and private sector. Housing development projects based on human settlement concept is continued. • PAKR still a major public sector housing program under low-cost housing category, with house prices being reviewed to account for the increase in construction cost, land, materials and labour cost among others. New price will be lower than low-cost housing prices offered by the private sector. • To intensify the implementation of PPR for rental in line with the zero squatters policy by 2005. • Housing provision for the hardcore poor in the rural areas continued via *Skim Pembangunan Kesejahteraan Rakyat.* • Housing Developers (Control and Licensing) Act, 1966 was amended in 2002 to provide for better protection of both house buyers and developers as well as to ensure proper and healthy development of the housing industry. • Institutional quarters for public servants will be continued. A special hire-purchase and buy-back scheme will be made available for public sector employees, especially ex-police and ex-armed forces personnel. • Under the Home Ownership for the People Project announced in the Package of New Strategies in 2003, the Government will provide subsidies on housing loans at an interest rate of 3% or zero interest rate upon deposit of 10% of the purchase price for the first year (for houses costing below RM100k and for loans obtained from BSN). • Efforts to be taken to upgrade the exterior and improve the facilities of PLCH flats as a greater proportion of urban population will be housed in high-rise flats and apartments due to scarcity of land for housing development (increased urbanization).
Ninth Malaysia Plan (MP9), 2006 – 2010	• To continue focusing on the provision of adequate, affordable and quality houses for all Malaysians. Private sector will take the lead role while the public sector will provide the necessary support and regulatory measures to ensure efficiency. • Government to provide low-cost houses via PPR while *Syarikat Perumahan Negara Berhad* (SPNB) will complement the Government's efforts by building more low- and low-medium cost houses in urban and rural areas. • To promote the use of Industrialised Building Systems and designs based on the modular coordination concept in housing construction. • Legislation will be reviewed to encourage the private sector to provide low-cost houses. This includes allowing more flexibility on the quota of low-cost houses as well as expediting the development and approval process. • The registration and distribution system for low-cost houses will also be enhanced to ensure proper distribution to genuine target groups. • Information in the database will be regularly updated and the criteria for selection of eligible buyers will be revised and standardised for all states.

Malaysia Plan	Objectives and housing initiatives
Tenth Malaysia Plan (MP10), 2011 – 2015	• To ensure access to quality and affordable housing. To expand affordable housing programmes and the provision of low-cost housing in urban and semi-urban areas. • To encourage greater home ownership among the bottom 40% households. • Private sector encouraged to develop more affordable medium-cost housing. • To establish a Housing Maintenance Fund with an initial funding of RM500 million, to assist the residents of both public and private low-cost housing units to conduct housing maintenance. • To promote the adoption of the Build-Then-Sell (BTS) approach among housing developers by providing additional incentives • Government to assist the rehabilitation of abandoned housing projects. • Government to focus on three strategies to address the challenges faced in affordable housing provision which include 1) streamlining the affordable housing delivery, 2) strengthening efforts to deliver high quality and environmentally sustainable housing and 3) cultivating a healthy and sustainable housing industry. • To increase the efficiency of housing provision, Government will rationalise and streamline the role of federal agencies involved in public housing, including JPN, the Ministry of Rural and Regional Development, the Kuala Lumpur City Hall, the Implementation Coordination Unit and SPNB.
Eleventh Malaysia Plan (MP11), 2016 – 2020	• To continue providing access for affordable housing for low-income and middle-income groups. This includes financial assistance to home buyers and enhanced regulatory framework to facilitate homeownership. • Special interest rate loans with a 10-year moratorium on sale of the property to be provided to B40 households to enable home ownership. • Housing programmes for poor and low-income households in urban and rural areas to be continued via *Program Bantuan Rumah* (PBR), PPR and RMR1M as well as housing for second generation FELDA and FELCRA settlers. • Continue the affordable housing schemes for middle-income households which includes PR1MA, PPA1M and RUMAWIP.
Twelfth Malaysia Plan (MP12), 2021 – 2025	• To increase the supply of quality affordable housing by improving access to affordable housing governance and ensuring inclusive housing development. Target to achieve 500,000 affordable houses constructed by 2025. • To establish a comprehensive database of affordable homeowners to monitor home ownership. To develop a housing integrated management system as a single-entry platform for application and processing of advertisement and sale permits. • To introduce ceiling prices of affordable housing in the secondary market to control house prices, especially in the urban areas. • Rebranding of PPR as *Rumah Malaysia* and will be based on specifications set out in the *Dasar Perumahan Mampu Milik Negara*. The exit policy on errant tenants of PPR will be strictly enforced, ensuring the programme only benefiting deserving households. • To continue existing housing programmes for B40, e.g. RTO, *Rumah Mesra Rakyat* and *Program Perumahan Penjawat Awam Malaysia*, while prioritizing B1 income decile to own affordable homes. For B40 and M40, the RTO programme will be expanded to cover houses priced up to RM500k with option to purchase the renting property within 5 years. • Fund for Affordable Homes, Youth Housing Scheme to aid in purchase of first house buyer. *Skim Pinjaman Perumahan* to assist households that own land, to build affordable houses. A dedicated fund will be explored to provide a financing scheme for eligible Bumiputera households. • Assist homeowners prevent houses from being auctioned – *murabaha* to *ijarah* to *murabaha* programme (own-to-rent-to-own) to repurchase property

Malaysia Plan	Objectives and housing initiatives
	• Managing housing construction costs: (1) review existing IBS, (2) introduce an affordable housing development model based on a cost-sharing mechanism between State-Federal Gov and Private developers. • Affordable housing to be built close to transport terminals to improve mobility and connectivity. • An allocation of RM2.25 billion to build and repair 85,500 housing units for the poor under *Program Bantuan Rumah*. • Specified measures to enhance governance, standards and regulations. This includes the enforcement of the PBB, Quality Assessment System for Building Construction Works (QLASSIC) as pre-requisite for development approval, and Residential Tenancy Act to regulate the rights of proprietors and tenants. • Formulate a housing redevelopment guideline using the public-private partnership model, to rebuild public housing, especially dilapidated flats, and old or abandoned government quarters. • Policy on Bumiputera quota in home ownership to be coordinated between Federal, State and local governments for affordable housing purchase.

Source: KRI compilation based on EPU (Various years)

1.2.7. Challenges faced

Despite the implementation of these projects, housing needs are still not met and there remain challenges faced in housing provision. A notable problem is the limited provision of low-cost housing leading to a shortage in affordable housing. This is due primarily to the private sector's preference for the higher profits of medium- and high-cost housing. Additionally, support from financial institutions and employers increased the demand for medium- and high-cost housing among the middle- and high-income earners[62]. As explained previously, this issue was addressed by the government by introducing both the 30% quota for low-cost housing projects and the 30% Bumiputera quota for the private sector.

Financial constraints also limit the opportunities for the low-income households to opt for home ownership programs. Low incomes and the inability to pay regular monthly instalments proved to be major constraints. Additionally, many work in the informal sector, hence lacked official documentation such as income statements to qualify for loan applications and be considered as potential applicants by developers[63].

Another major obstacle identified was the shift in the state governments' prioritisation of the development of medium- and high-cost housing. During the 1970's, they generally reduced financial allocation for public housing, channelling resources to medium- and high-cost housing instead. This led to a reduction in the number of low-cost units constructed, ultimately creating housing shortages for lower income groups.

[62] Nurizan Yahaya (1989)
[63] Nurizan Yahaya (1989)

Administrative delays also contributed to unsatisfactory performance in housing provisions. Razali (2002) suggests that administrative delays were associated with issues related to land use policies; building codes and planning policies; production and construction policies, and existing units' management and distribution. Despite efforts to increase the stock of low-cost housing and the introduction of RTO schemes, the need for affordable housing could not be met, resulting in an increase in urban squatter populations.

1.2.8. The development of Program Perumahan Rakyat (PPR)

The Program Perumahan Rakyat (PPR) is a federal government programme approved by the Cabinet in February 2002, which targeted urban squatters. As previously described, high rates of urbanisation and rural-urban migration beginning in the 1970s had increased the population density and thus housing needs in urban areas. To address this issue, efforts to meet housing needs were undertaken by state governments through their respective State Economic Development Corporations (SEDC)[64].

In the 1980s, the private sector replaced the public sector as the primary provider of low-cost housing[65]. This was in line with the government's privatisation policy and requirements that low-cost housing must comprise 30% of all residential developments. The following decade (1990s) saw a shift from the development of landed property to strata housing, especially in urban areas, due to rising land costs[66].

Malaysia's housing policy had long prioritized home ownership, even low-cost home ownership, over renting[67]. However, a decision was made to emphasize renting over ownership in social housing programmes as a 1993 housing ministry study showed that squatters were unable to buy low cost housing[68].

Since home ownership was not a feasible option for squatters, the federal government opted to strengthen its rental social housing programmes without completely abandoning the goal of low-cost home ownership. Squatters would be relocated to newly developed social housing units. Junaidi Junaidi Awang Besar (2018) suggests that this policy was developed not primarily to help squatters escape their difficult living conditions, but so that the land they were living on could be developed.

Prior to 2002 there existed two separate social housing programmes that were brought together in 2002 under the new PPR policy. The first was the PLCH programme, or known as *Perumahan Awam Kos Rendah* (PAKR) which was introduced in the third Malaysia Plan (1976 – 1980). State governments received loans from the federal government to develop low cost housing units that were then sold to low income groups, either outright or through rent-to-buy instalment plans[69].

[64] Syafiee Shuid (2016)
[65] Syafiee Shuid (2016)
[66] Syafiee Shuid (2016)
[67] Razali Agus (1989)
[68] Syafiee Shuid (2016)
[69] JPN (n.d.)

The second programme was the *Program Perumahan Rakyat Bersepadu* (PPRB) that was incorporated into MP7 in 1998 under the auspices of the National Economic Action Council (*Majlis Tindakan Ekonomi Negara*, MTEN). The programme was later handed over to the Ministry of Local Government Development (*Kementerian Pembangunan dan Kerajaan Tempatan,* KPKT). Under this programme, rental housing units were to be built to resettle urban squatters[70]. The rent was set at RM124 per month in order to make it affordable for squatters. However, maintenance costs were estimated in 2012 to average RM210 per month[71].

In February 2002, the Cabinet approved rebranding the PAKR program as *PPR Dimiliki Dasar Baru* and the *PPR Bersepadu* program as *PPR Disewa Dasar Baru*. The target of the programme was to have 50,000 rental units and 40,000 for-sale units completed by 2006. The allocation of housing units to states was to be determined by projected housing needs, with priority given to urban areas experiencing squatter problems[72].

Funding for the development and construction of PPRs was provided by the federal government, through the National Housing Department (J*abatan Perumahan Negara (JPN)*). Although the federal government would pay the full land costs of the *PPR Dimiliki* (PPRM) sites, it would not do so for the land costs of *PPR Disewa* (PPRS) sites, as the units would be handed over to state governments. The federal government would be responsible for project design, tendering, and construction. Once construction was completed, state governments would take over responsibility for selecting tenants, collecting rent and maintaining the PPRs[73].

In 2009, the federal government moved to sell 62% of KL public housing to sitting tenants, an indicator that the highly subsidized PPR rental rates might not be sustainable in the long term without substantial increments[74].

As of September 2022, there were 98 PPRS (81,373 units) and 58 PPRM (16,823 units) completed projects. Additionally, about 16 PPRS (7,545 units) and 14 PPRM (5,592 units) projects were still under the construction and planning phase[75]. The incoming supply indicates that the government remains committed to build more PPRs for low-income households.

[70] JPN (n.d.)
[71] Syafiee Shuid (2016)
[72] JPN (n.d.)
[73] JPN (n.d.)
[74] Syafiee Shuid (2016)
[75] KPKT (2022)

1.3 Concluding Remarks

Spatial and economic planning have been advanced as means to promote a more equitable distribution of resources; they are viewed as instruments for social change, redressing inequalities and working for the benefit of disadvantaged groups[76]. Therefore, the desire for improved equity conditions for all groups of society prompted several initiatives in the NEP, inadvertently it also created more social housing programmes in urban Malaysia.

Most social housing initiatives in the late nineteenth-century and early twentieth century in the industrialized West were due to the poor living conditions of workers and their families that arose from rapid industrialization and urbanization. The process of urbanisation was understood to be a natural consequence of industrialization, as recognised in formal economic models of development. For example, Lewis's (1954) dual-sector economic model for development proposed low-productivity labour in the traditional (rural) agriculture sector will be transferred to the modern (urban) industrial sector as an economy grows. The model assumes that there is a large surplus of cheap, unskilled labour in rural areas that was drawn into urban settlements in response to higher wages. This rural-urban migration is expected to drive down urban wages, therefore allowing for the comfortable profit margins necessary to finance further capital expansion in the urban sector.

However, the context for Malaysia was vastly different. The prevailing social policies from the 1970s onwards were to accelerate rural-urban migration. This accelerated process was not accompanied with the attendant job creation nor adequate housing provisions in the urban centres. In other words, inward migration was not due to a natural 'pull factor' associated with economic opportunities. Thus, the outcomes were the creation of new urban families living in squatter settlements, with little financial resources (mostly due to having a self-sufficient agrarian background) and limited job options. The number of squatters increased significantly too, indicating a positive response to the rural-urban migration policy. Even as late as 1975, approximately 30% of the total population in Kuala Lumpur (approximately 222,000 people) were still squatters (see Figure 1.5). In lieu of these unique circumstances, the government played a significant role in fulfilling housing needs and in providing secured, tenured housing for squatters. Most of these initiatives were placed under home ownership schemes, due to the objective of having a better distribution of equities in urban centres.

[76] Gans (1994)

CHAPTER 02

CHAPTER 2

INTRODUCING THE CASE STUDIES: BUILDING DESIGN AND RESIDENTS' PROFILES

This chapter 2 provide insights on the physical residential environment of the PPRs (i.e. levels of density, physical design and variety of amenities) as well as the residents' demographic profile (i.e. household size and composition, previous housing experience). The site specificities of each case studies lay the context for analysing residents' satisfaction with the unit and the housing complex (Chapter 3) as well as households' locational satisfaction due to the changed spatial ecosystems post-relocation (Chapter 4).

The case studies selected reflects the context of rapid urbanization and the need to provide shelter for low-income urban population. Therefore, the selection process includes the parameters of states with high urbanization rates and population densities [77]. The social housing complexes must be of high densities; due to the generally higher incidences of urban slums formed in stratified buildings rather than landed units. The housing complexes are inhabited for more than 10 years to facilitate the investigations on the living conditions (or level of deterioration) of the complexes as well as mapping the new spatial ecosystems formed from forced relocations.

2.1 The Purpose of Satisfaction Surveys

As depicted in Figure 1.3, satisfaction surveys have been used by many countries as one of the major inputs to develop better housing standards. The development of good housing standards is even more critical in social housing since it is allocated outside of market mechanisms, and therefore often lacking the profit incentive to maintain good standards.

However, some studies for social housing/ renting uncover higher satisfaction levels compared to the private rental market[78], even though the unit and prevailing neighbourhood conditions of the former are in relatively poorer condition. Therefore, as important as it is to look at absolute satisfaction levels, it is equally important in social housing satisfaction surveys to analyse the relative significance of the parameters that contribute to the satisfaction levels reported. This is because preventive measures (e.g. identifying and addressing parameters that causes negative housing experience) is more cost-effective compared to when the housing complex is already in decaying conditions.

Several residential satisfaction surveys[79] have been done on Malaysia's PPRs[80]. Interestingly, despite the surveys covering different PPRs, it appears that similar issues were uncovered across the case studies. It was found that residents are generally concerned about issues of security, safety, sanitation and cleanliness. A few studies[81] also highlighted the need for better maintenance of facilities, citing frequent lifts breakdowns as a common problem. Others cited the relocation process of squatters as diminishing both housing dwellers' economic performance and community rootedness[82].

[77] The appropriate scale should be at city and not state level, but data is not available at the city scale.
[78] Lu (1999), Mohit et al. (2010); however, care must be given when looking at satisfaction surveys of social housing that is part of a country's social security's systems.
[79] Also referred as housing satisfaction survey.
[80] See Mohit et al. (2010), Goh and Yahaya (2011), Husrul Nizam Husin et al. (2015) and Nor Haniza Ishak et al. (2016)
[81] Goh and Yahaya (2011), Husrul Nizam Husin et al. (2015) and Nor Haniza Ishak et al. (2016)
[82] KRI (2017)

This study complements the existing literature by introducing the impact of densification as experienced by residents in the housing units and complexes within the context of personal and shared spaces. It provides analysis on the different housing dwellers' spatial ecosystem pre- and post-relocation with regards to their daily needs. The study employed a residential satisfaction survey and structured interviews to provide insights on the following:

1. Residential satisfaction for their own housing unit and building complex, based on the different level of densities and varieties of amenities for each PPR complex.
2. Residential satisfaction for the differences in spatial ecosystem pre- and post-relocation, with regards to employment, schooling and social/daily needs/activities[83].
3. The role of the Residents' Association in creating positive living conditions in social housing complexes.

2.2 The Case Studies

Five PPRs were selected from the research design of purposive sampling– four located in Kuala Lumpur and one in Pulau Pinang. All the PPRs in Kuala Lumpur fall under the administration of *Dewan Bandaraya Kuala Lumpur* (DBKL) while PPR Jalan Sungai in Pulau Pinang is under M*ajlis Bandaraya Pulau Pinang* (MBPP). The general profile of the selected PPRs and their respective response rates are shown in Table 1.1. In total, 3,878 residents were interviewed with an overall response rate of 72.1%.

Table 2.1: Details of the PPR selected and survey response rate

	PPR Beringin	PPR Kerinchi	PPR Wahyu	PPR Salak Selatan	PPR Jalan Sungai
State	K. Lumpur	K. Lumpur	K. Lumpur	K. Lumpur	P. Pinang
City Council	DBKL	DBKL	DBKL	DBKL	MBPP
Building occupancy date	2003	2003	2002	2004	2000
No. of blocks	6	6	3	2	2
No. of floor levels	18	18	18	18	22
Total no. of units	1,896	1,896	948	632	568
No. of vacant units	88	41	35	33	51
No. of households surveyed	1,258	1,205	669	343	403
Survey response rate	**69.6**	**78.3**	**73.3**	**57.3**	**77.9**

Note:
1. The response rate was calculated by counting the number of respondents from the total units available for rental within each PPR while excluding vacant units.
2. For PPR Kerinchi, only 5 out of 6 blocks were surveyed as the excluded block (Block F) was designated for transitioning / temporary residents. Thus, the response rate is limited to these 5 blocks.
3. For PPR Jalan Sungai, some of the housing units were leased out by bedrooms to single individuals and thus the survey accounts them as separate, distinct units.

[83] Oldenburg (1989)

2.3 Characteristics of the PPR flats

2.3.1. Density and building design

Table 2.2 summarizes the attributes of each PPR. The PPR complexes are stratified units between 18 and 22 storeys. They vary in number of blocks; from two to six blocks per complex, with each block providing 284 to 316 units. They also cover land areas of different sizes, thus recording different density levels. Within the sample, PPR Jalan Sungai had the highest level of density, holding 626 dwelling units per hectare. This was followed by PPR Salak Selatan, with 336 units per hectare. PPR Beringin and PPR Kerinchi, despite being the most populous complexes within the sample, possessed a density of 310 and 272 units per hectare. This is due to the large area allocated to the two complexes as shown in the Table 2.2. Finally, PPR Wahyu has the lowest level of density with 234 units per hectare.

Table 2.2: Summary of complex attributes and measures of density

	No. of blocks	No. of floors	Total no. of units	Estimated total population	Total complex area (hectare)	Persons per hectare	Dwelling units per hectare
PPR Beringin	6	18	1,896	8,364	6.109	1,369	310
PPR Kerinchi	6	18	1,896	7,966	6.970	1,143	272
PPR Wahyu	3	18	948	4,325	4.046	1,069	234
PPR Salak Selatan	2	18	632	2,379	1.882	1,264	336
PPR Jalan Sungai	2	21	568	2,348	0.848	2,770	626

Note: The total complex area was measured using aerial photos from Google Earth. The main road and adjacent buildings were taken as the boundaries separating the PPRs from the surrounding neighbourhood. However, one limitation to this method is that the boundaries are less obvious when the physical buildings are not surrounded by roads (i.e. open space) such as PPR Salak Selatan which is situated on a hill.

Photo 2.1: A bird's eye view of the PPRs

Note: From left to right; PPR Beringin, PPR Kerinchi, PPR Wahyu, PPR Salak Selatan and PPR Jalan Sungai
Source: Google Satellite Image

Two distinct building designs

The PPRs in KL are relatively distinguishable from other neighbouring housing complexes due to their uniform and standard high-rise design (see Photo 2.2). In contrast, PPR Jalan Sungai exhibits a different building design with a bridge connecting the two blocks. It should be noted that the latter's building design is unique to PPR Jalan Sungai, and not a feature of the overall Penang state' social housing products[84].

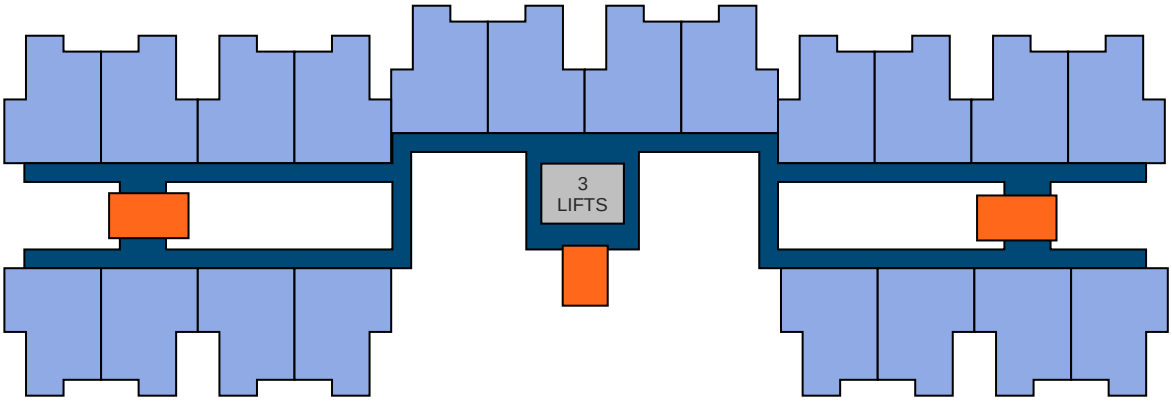
Photo 2.2: Selected PPRs from the case study

Note: Top left—PPR Beringin, bottom left—PPR Kerinchi, right—PPR Jalan Sungai

The next two figures compare the floor plans of the KL and Penang PPRs in the case study. Figure 2.1 shows the symmetrical design adopted by KL PPRs where units are situated in front of each other. In contrast, PPR Jalan Sungai embraced a more 'single file' concept where units are situated on one side only (Figure 2.2). Both designs have three lifts servicing each block (the lifts are shaded in grey), with PPR Jalan Sungai having a higher ratio of total floors to the number of available lifts (7:1) as compared to the KL PPRs (6:1). However, the lifts in PPR Jalan Sungai serve from 12 to 13 units per floor, while the lifts in the KL PPRs serve from 12 to 20 units per floor. Photo 2.3 further illustrates the difference between the two designs.

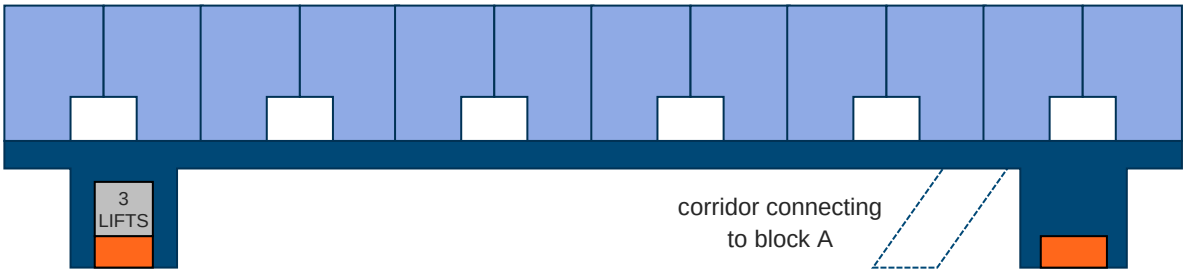
[84] For instance, PPR Taman Manggis and PPR Taman Bagan, both located in Pulau Pinang, follow the same building design as the PPRs in Kuala Lumpur.

Figure 2.1: Typical floor plan for PPRs located in Kuala Lumpur



Note: Light blue—units, dark blue—corridors, orange—staircase, grey—lift. The above is the level plan for level 1 to 14 (excluding ground floor) which contained 20 units per floor. Level 15 to 17 contained 12 units per floor.
Source: DBKL (2018)

Figure 2.2: Typical floor plan for PPR Jalan Sungai (block B)



Note: Light blue—units, dark blue—corridors, orange—staircase, grey—lift.
Due to the unavailability of the actual level plan, these are rough sketches based upon the team's observations. Hence, the proportions drawn may not be entirely accurate. Block B contained 12 units per floor while block A contained 13 units per floor.

Photo 2.3: Up close—Comparing the block design

Note: Left—PPR Salak Selatan (Kuala Lumpur). Right—PPR Jalan Sungai (Pulau Pinang)

Another notable difference between the designs was that PPR Jalan Sungai has residential units located on the ground floor, compared to the KL PPRs where the units were situated on the first floor and upwards. According to one of the residents in PPR Jalan Sungai, these units were designated for residents with disabilities, particularly those that have difficulty in accessing the stairs (e.g. wheelchair bound). This design concept highlights the hazards faced by disabled residents in the KL PPRs in which residents who are unable to use the stairs are more likely to be left stranded in the event of an emergency (such as in the case of conflagration or breakdown of lifts).

Figure 2.3 and Figure 2.4 illustrate the layout of the KL PPRs and PPR Jalan Sungai. The KL PPRs were built following the National Housing Standard for Low-Cost Flats (CIS 1998). The individual units feature three bedrooms, one living room that also functions as a dining room, one kitchen, two toilets (one of which is a bathroom), one yard and one utility room[85]. Overall, the total floor area of a PPR unit is relatively small, encompassing 650sqft (see Table 2.3 for more details on the building specifications of a unit).

It is worth mentioning that all successful PPR applicants and existing residents receive the same three-bedroom unit irrespective of their household size or composition. This results in some units being overcrowded while others are under occupied. One way to overcome this limitation, as practiced by PPR Jalan Sungai, is to lease out the bedrooms separately to single individuals. The flat has allocated one floor of the block for this purpose, allowing for greater flexibility in accommodating residents.

Figure 2.3: Layout of a KL PPR unit

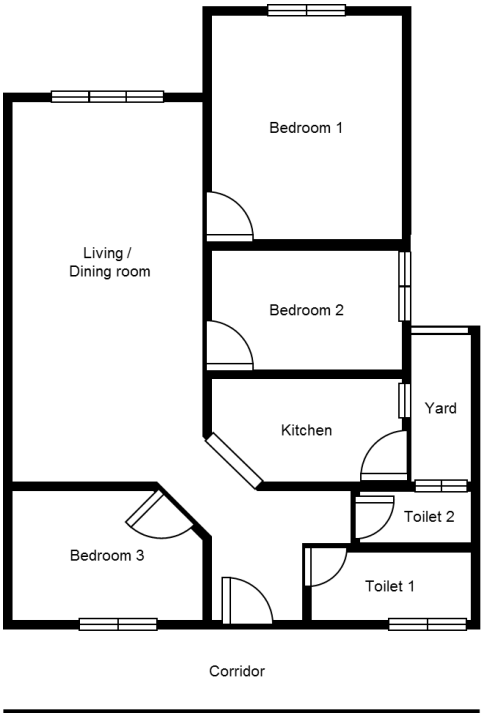


Table 2.3: Building plan for a KL PPR unit

	Floor area	
	m^2	sqft
Overall unit	**60.385**	**650.00**
Bedroom 1	10.821	116.48
Bedroom 2	6.671	71.80
Bedroom 3	6.505	70.00
Toilet 1 (bathroom)	3.071	33.00
Toilet 2	1.710	18.41
Kitchen	4.515	48.60
Living room + Dining room	24.19	260.42
Yard	2.902	31.23

Source (layout): DBKL (2018)
Source (table): DBKL (2018)

[85] The utility room is actually an allotted space near the entrance, not an actual room.

Figure 2.4: Layout of a PPR Jalan Sungai unit

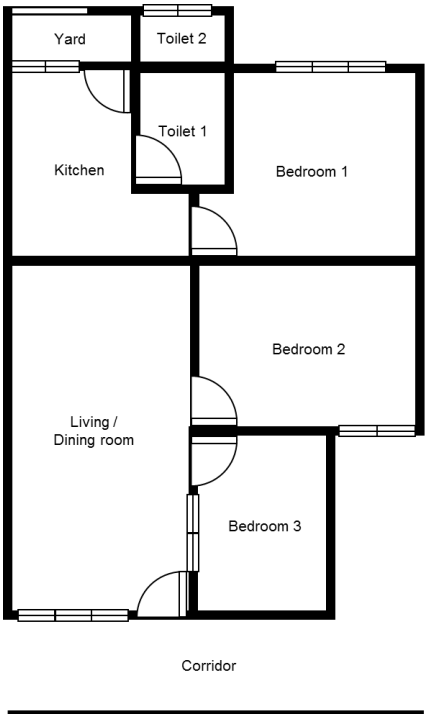


Table 2.4: Building plan for a PPR Jalan Sungai unit

	Floor area	
	m^2	sqft
Overall unit	**52.00**	**559.72**
Bedroom 1	9.48	102.04
Bedroom 2	9.26	99.67
Bedroom 3	6.50	69.97
Toilet 1 (bathroom)	2.72	29.28
Toilet 2	1.26	13.56
Kitchen	6.38	68.67
Living room + Dining room	14.73	158.55
Yard	1.67	17.98

Source (layout): MBPP (2020)
Source (table): MBPP (2020)

2.3.2. How amenities shape the residential environment

Amenities are key to understanding quality of life because they are precisely what make some places attractive for living and working, especially relative to other places that do not have them and/or are burdened with their opposites, disamenities.

Mulligan and Carruthers (2011)

Amenities are goods and services, site or region-specific, that make some locations attractive to live and work. Their opposites, disamenities, make places less desirable[86]. Examples of amenities include public goods and services (e.g. schools and education centres), private consumption goods (e.g. restaurants), transportation (e.g. train and bus stations) and communication, as well as cultural institutions (e.g. museums).

The existence of these amenities (or disamenities) can influence the urban growth and regional development as cities compete for firms and households. Mulligan and Carruthers (2011) argued that, all things being equal, people are drawn to attractive settings, and thus expect to pay a premium, such as higher house prices, for them. Conversely, people would expect a discount e.g. paying lower rent in exchange for staying in unattractive settings.

[86] Mulligan and Carruthers (2011). The authors further grouped amenities into two types – natural amenities and human amenities. Natural amenities are those that are not influenced or produced by people, such as the climate or landscapes, while human amenities are (such as constructed buildings like a public library).

However, in the case of PPRs, the rental rates are artificially low as they are subsidised by the government. Therefore, the interplay between the amenities provided and housing costs is not as straightforward, and it is difficult to determine which factor—amenities or housing costs—has a larger influence on households' decisions about desirable places to live. However, in the case of social housing where shelter is a provided out of need, it begs the question on whether such trade-offs on costs (the ability to pay for amenities) should play a role in determining the poor's wellbeing.

Observations of the amenities provided across the case studies revealed that the housing complexes are not exactly homogenous despite being under the 'PPR' umbrella. Although the residential blocks of the PPRs in Kuala Lumpur shared the same uniform design, they differed in terms of the range of amenities provided. The spaces on the ground floor level have also been utilised differently (such as being used as meeting rooms, childcare centres or shop lots), with some even being renovated or expanded. The following tables (Table 2.5 – Table 2.9) describe the existing amenities for each PPR within the case study.

Table 2.5: Case Study 1

PPR Beringin

Photo 2.4: Aerial view of PPR Beringin

Source: OpenStreetMap

General description: PPR Beringin (also known as PPR Taman Wahyu I) is located in Jinjang Utara, Kepong, Kuala Lumpur. It is the largest PPR within the sample, consisting of six blocks and estimated to house around 8,364 residents. The complex is situated by the Sungai Batu. It is also close to three primary schools—Sekolah Rendah Agama Abu Dzar Al-Ghifari, SJK (C) Jinjang Tengah 1 and SJK (C) Jinjang Tengah 2.

PUBLIC SHARED SPACES

Office and community space: Of the six blocks, four held offices and had allocated rooms for community meetings. The DBKL's Small Office (*Pejabat Kecil DBKL*) operated in block B, while the Residents' Association Office, the Operational Room (*Bilik Gerakan*) and Management's Office were in the adjacent Block C. Aside from that, the residents in Block D had designated a specific room for their use, tagging it as Community Room (*Bilik Komuniti*).

There was a large community centre, Beringin Community Centre (*Pusat Komuniti Beringin*) located close to block A. Constructed by the Ministry of Federal Territories, the community centre contained facilities such as a large hall, badminton and basketball courts, and office rooms for residents to conduct social activities. Additionally, there was also a Community Hub built by Urbanice Malaysia within the complex area. The hub was built from used containers and was fitted with a mini library and had a multi-space area for residents to play and socialise.

Sports and recreation: The PPR had two playgrounds, a badminton court and basketball court located close to the buildings.

Religious facilities: A mosque, *Surau al Hikmah*, was built close to the complex (located opposite of block B). Besides, one room under the Block B building was dedicated to religious classes (*Kelas Kafa*) organised by residents with the mosque's administrator.

Parking space: There were designated parking spaces for cars around the building. Parking spaces for motorcycles were allocated at the ground floor of the block and in the surrounding area.

Sanitation: A refuse chamber (*Rumah Pembuangan Sampah*) was placed close to each block.

PAID SHARED SPACES

Daily needs: Grocery stores that sell wet food were available in three of the blocks (Block A, D and E). One of the blocks also contained small shops (e.g. tailor shop and clothing stores). A few makeshift food stalls were spotted near blocks C and D, selling local food. Additionally, residents could also purchase food from *Kafe@Beringin,* a food court located within walking distance from the complex.

Healthcare facilities: A clinic (*Klinik Sosial KRT*) was found in Block A.

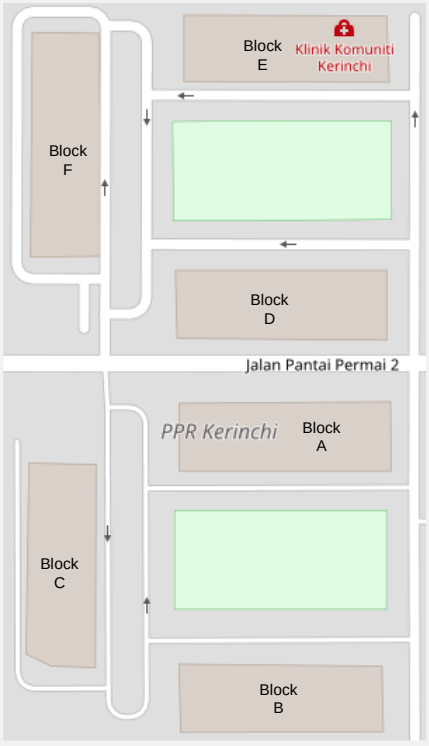
Childcare centres and education centres: There were three kindergartens in Block F, occupying the rooms in the ground floor area. There was also a tuition centre in Block A.

Internet facilities: There was an internet centre for residents' use, along with signage saying that community Wi-Fi is provided.

Table 2.6: Case Study 2

PPR Kerinchi

Photo 2.5: Aerial view of PPR Kerinchi



Source: OpenStreetMap

General description: PPR Kerinchi (also known as PPR Lembah Pantai) is located in Lembah Pantai, Pantai Dalam, Kuala Lumpur. Similar to PPR Beringin, PPR Kerinchi contains six blocks, and is estimated to house around 7,966 residents. The complex is located south-west of Bangsar South.

PUBLIC SHARED SPACES

Office and community space: All six blocks utilised available rooms as office spaces or community meeting rooms. The DBKL's Small Office was located in Block B, along with KOSPEN Community Centre (*Pusat Komuniti KOSPEN—Komuniti Sihat Perkasa Negara*). Meanwhile, the Residents' Association Office was situated in Block F. The area on the ground floor of Block F had also been retrofitted as a community hall.

Additionally, there were also several buildings used by social organisations that were built close to the residential blocks. For instance, a women's club (*Kelab Wanita Harmoni Kuala Lumpur*) occupied a building located next to Block C, while another community association (*Persatuan Pembangunan Masyarakat India Pantai Dalam*) utilised a structure near Block F. Residents of PPR Kerinchi also had easy access to the large public library (*Kompleks Perpustakaan 1Malaysia*) located east of Block A.

Sports and recreation: There were two playgrounds in the complex. Aside from that, there were badminton and futsal courts next to the playground. Residents could also make use of the large football field located close to Block B.

Religious facilities: The corner area of Block D had been renovated and extended for use as a place for prayers and to hold religious classes (*Madrasah al Falah*). The team also observed one room in Block D was also used as a classroom for religious classes. However, it should be noted that while PPR Kerinchi did not have its own mosque, residents could access a nearby mosque (*Masjid Al-Ikhlasiah*) located at the back of Block F that was connected by a small pathway.

Parking space: There were designated parking spaces for cars around the building. Parking spaces for motorcycles were allocated at the ground floor of the block and in the surrounding area.

Sanitation: A refuse chamber was placed close to each block, except for Block F which appeared to share with Block D or E.

PAID SHARED SPACES

Daily needs: Grocery stores were only available in Block A and D, both located at the centre of the six blocks. There were also some temporary stalls set up on the ground floor of Block A, while others were located across the complex. For instance, Block E (located at the north end of the complex) had a few makeshift shops that sold a range of products (e.g. grocery store and electrical repair services). A few of these shops appeared to have long-closed and/or been boarded up. There were also similar stalls erected at the south end of the complex behind Block B, selling mostly food.

Residents could also purchase their necessities at the Bazaria Pantai Dalam located north-east of the complex within walking distance. The market held many local restaurants and also contained many different shops (e.g. a convenience store, a second-hand clothing store and a barber shop).

Healthcare facilities: A clinic (*Klinik Komuniti Kerinchi*) was found in Block E.

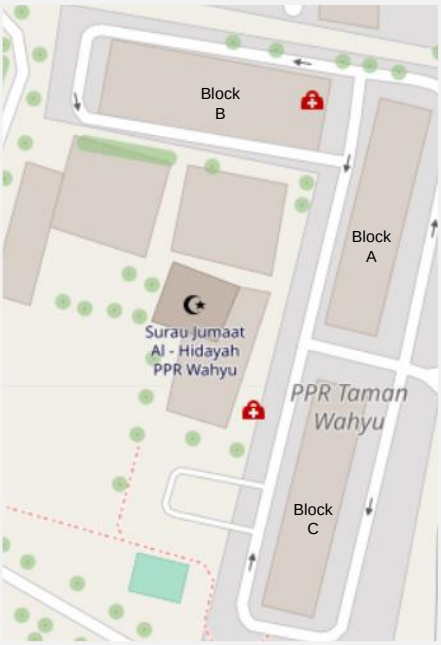
Childcare centres and education centres: The day-care centre, *Taman Bimbingan Kanak-Kanak PPR Lembah Kerinchi* established by *Jabatan Kemajuan Masyarakat (JKM)*, operated in Block E and F. Similarly, there was a childcare centre under the *Permata Programme* set up in Block F (called *Pusat Anak Permata Negara*). A small space next to the building was reserved for the childcare centre which was fenced off from the public.

Internet facilities: An internet centre was available in Block C.

Table 2.7: Case Study 3

PPR Wahyu

Photo 2.6: Aerial view of PPR Wahyu



Source: OpenStreetMap

General description: PPR Wahyu (also known as PPR Taman Wahyu II) is located east of PPR Beringin, separated by Sungai Batu. It has three blocks, accommodating around 4,325 residents. The complex was gated and had a guardhouse at the entrance (although entry and exit did not seem restricted). The was a large Tesco supermarket situated east of the PPR that was within walking distance.

PUBLIC SHARED SPACES

Office and community space: The Administration's Office (*Pejabat Pentadbiran PPR Taman Wahyu II*), Neighbourhood Watch's Office, SRS Operation Room (*Bilik Gerakan Skim Rondaan Sukarela*) were established in Block A, which was located between Block C and D. Meanwhile, DBKL's Small Office was set up in Block B, along with a meeting space for the Joint Management Body. In Block C, one room was designated as a space for activities (named *Bilik Aktiviti PPR Wahyu*). It should be noted that PPR Wahyu had its own multi-purpose hall which was built opposite Block B.

Sports and recreation: The PPR had two playgrounds, along with a large football field. In addition, PPR Wahyu had its own recreational centre for senior citizens (*Pusat Aktiviti Warga Emas Parlimen Batu*) constructed within the complex.

Religious facilities: A mosque was built at the centre of the complex (*Surau Jumaat al-Hidayah*). In addition, a religious school (*Maahad Tahfiz Bustanul Quran PPR Taman Wahyu*) has been constructed behind the mosque.

Parking space: There were designated parking spaces for cars around the building. Parking spaces for motorcycles were allocated at the ground floor of the block and in the surrounding area.

Sanitation: A refuse chamber was placed close to each block.

PAID SHARED SPACES

Daily needs: There appeared to be only one grocery store available within the complex, located in Block B. There also seemed to be a lack of food stalls within the complex. However, residents could purchase their necessities from the supermarket and eateries available outside of the complex (short walking distance).

Healthcare facilities: A clinic (*Klinik Komuniti Taman Wahyu II*) operated in Block C. Additionally, PPR Wahyu also had its own Community-Based Rehab Centre (*Pusat Pemulihan Dalam Komuniti PPR Wahyu*) established by Jabatan Kebajikan Masyarakat (JKM). It served as a one-stop centre for disabled people (i.e. provides information, advice and appropriate training activities) and shared the same building with the recreational centre for senior citizens.

Childcare centres and education centres: The PPR also had a separate dedicated building for kindergartens and preschools. There were two kindergartens and two preschools operating at the time of observation.

Internet facilities: There was one internet centre located in Block C, along with signage noting that community Wi-Fi is provided.

Table 2.8: Case Study 4

PPR Salak Selatan

Photo 2.7: Aerial view of PPR Salak Selatan

Source: OpenStreetMap

General description: PPR Salak Selatan is located in Kampung Baru Salak Selatan, Kuala Lumpur. The flat consists of two blocks with an estimated 2,379 residents. Situated on top of a hill, there is only one driving route into the complex area. However, residents can still walk to the neighbouring area through a pathway with stairs located behind Block B.

PUBLIC SHARED SPACES

Office and community space: DBKL's Small Office was set up in Block A, while the Joint-Management Body of PPR Salak Selatan and the Rukun Tetangga occupied two rooms in Block B. Additionally, one room in Block A was reserved as a 'multi-purpose' room.

Sports and recreation: Only one playground was available in the PPR, located next to Block A.

Religious facilities: One room in Block B was designated as a praying space (called *Surau al Falah*). Aside from that, a site visit of the area also revealed a makeshift Chinese prayer altar built behind the refuse chamber located between the two building blocks.

Parking space: There were designated parking spaces for cars around the building. Parking spaces for motorcycles were allocated at the ground floor of the block and in the surrounding area.

Sanitation: A refuse chamber was placed next to each block.

PAID SHARED SPACES

Daily needs: There was only one grocery store available in the complex, located in Block A. However, residents could obtain their necessities from the nearby market and hawker centre (*Pasar dan Pusat Penjaja Kampung Baru Salak Selatan*) located south-east of the PPR (within walking distance).

Healthcare facilities: None were available within the complex. A closer look revealed that a health clinic (*Klinik Kesihatan*) and community clinic (*Klinik Komuniti*) were located within the vicinity (about 1km from the PPR).

Childcare centres and education centres. None were available within the complex.

Internet facilities: There was an internet centre set up in Block B along with signage noting that community Wi-Fi is provided.

Table 2.9: Case Study 5

PPR Jalan Sungai

Photo 2.8: Aerial view of PPR Jalan Sungai

Source: OpenStreetMap

General description: PPR Jalan Sungai (also known as PPR Sungai Pinang) is located next to the Sungai Pinang river. It has two blocks and houses around 2,348 residents. The complex is fenced-off, although there appears to be no restriction in entering or exiting the compound.

PUBLIC SHARED SPACES

Office and community space: The Management's Office (under MBPP) was located in Block B. At the same time, the Residents' Association occupied a room in Block A.

Sports and recreation. There was no available playground within the compound. However, residents could access the 'Pocket Park Sungai Pinang' (a small park with a playground), located just outside of the PPR

Religious facilities. There was a *surau* situated at the corner-end of the two blocks (*Surau al Muhajirin*).

Internet facilities: None were available within the complex.

Parking space: Parking spaces for motorcycles were designated within the inner area of the blocks. Meanwhile, parking spaces reserved for cars were situated at the outer area of the residential buildings.

Sanitation: It was unclear whether the PPR had a designated refuse chamber within the complex.

PAID SHARED SPACES

Daily needs: Food stalls were available just outside of the PPR. There was also a market (*Pasar Jalan Patani*) within walking distance located behind the PPR.

Healthcare facilities: None were available within the complex.

Childcare centres and education centres: A preschool was found next to the *surau*, occupying a room at the ground floor area.

The previous tables have shown that the types of amenities offered differs by PPR, with some amenities more commonly available than others. For instance, internet centres were found in all the KL PPRs, but not in PPR Jalan Sungai. There were also some facilities that were constructed and/or managed by agencies aside from the local authority in charge of the complex. One example would be the Community-Based Rehab Centre in PPR Wahyu managed by *Jabatan Kebajikan Masyarakat*, and the Community Hub built by Urbanice in PPR Beringin.

It was also observed that some facilities were 'added-on' long after the residential buildings were built, in response to demand from the residents. This was the case for the Beringin Community Centre and the mosque, Surau al Hikmah which were later additions to PPR Beringin[87].

[87] Both Beringin Community Centre and Surau al Hikmah were built in 2017.

Additionally, while some facilities are absent within the immediate complex area, this does not necessarily mean that residents have trouble acquiring the products or services as there might be similar facilities located within the neighbourhood. For example, although PPR Salak Selatan does not have its own government-run clinic as PPR Kerinchi, the nearest Klinik Kesihatan can be found approximately one kilometre away from the PPR Salak Selatan complex. The dynamics of the spatial ecosystem of the respective PPRs is discussed in-depth in the spatial analysis section in Chapter 4.

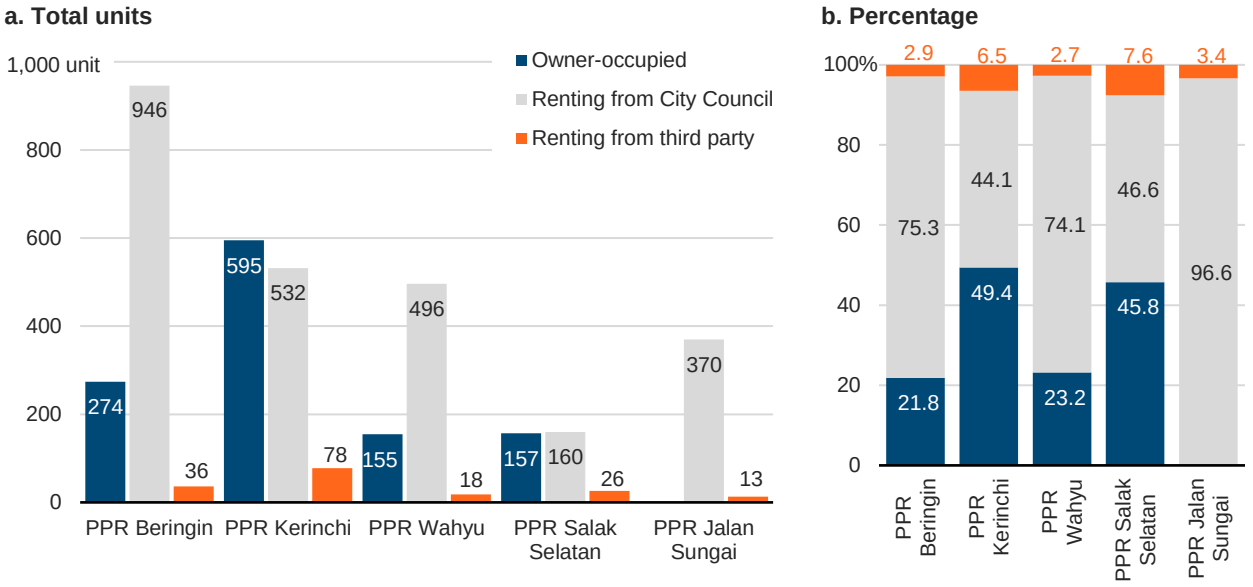
2.4 Households' Profile

This section presents the profile of households as context for the analyses in subsequent chapters. Respondents were required to give details of their respective socio-demographic information and past housing experiences before they moved into their current PPR units[88]. The survey questionnaire also included inquiries into the backgrounds of household members, enabling the study to explore the population dynamics within and between the PPRs.

2.4.1. Housing tenure

Despite the fact that the PPRs selected for this case study were introduced under the PPR programme[89], more than 20% of the KL PPR units are owner-occupiers. Meanwhile, PPR Jalan Sungai only supply units for rental. The majority of renters rent from City Councils, while those renting from third parties accounted for a relatively small proportion[90].

Figure 2.5: Ownership of current residence



Note: NR / NA responses are not displayed due to small values which are; PPR Beringin—2 cases and PPR Jalan Sungai—20 cases. The percentage displayed excludes NR / NA responses.

[88] To see the full list of survey questions, see Appendix B.
[89] This means that the PPRs originally offered only rental units but were later opened for purchase by current residents. However, it is unclear whether PPR Jalan Sungai was also introduced under the same programme as the KL PPRs.
[90] The survey did not distinguish whether residents renting from 'third-parties' were renting from unit owners or from unit renters who were subletting their units.

Table 2.10 and Table 2.11 breaks down the housing tenure by the reasons cited for moving into the PPR and the previous household income[91] to see how these factors affect ownership levels. Evidently, the total number of renters that 'were ordered to move due to redevelopment' was significantly larger than the corresponding number of owners (renters: 1,701, owners: 965). A further breakdown of housing ownership against previous household income depicts more owners than renters in the higher income brackets, where 41.3% of the owners had a household income of RM2k or higher, versus 25.5% of the renters. These results suggest that ownership of the PPRs occurred because households had the means to purchase their homes rather than because units were 'given-away' to residents who were forced to relocate.

Table 2.10: Reasons for moving into PPR by housing tenure

	Ordered to move	Migrated from rural	Natural disasters	Others	Total respondents
Renter	1,701 (64.4%)	152 (5.8%)	180 (6.8%)	610 (23.1%)	2,643 (100%)
Owner	965 (81.4%)	46 (3.9%)	36 (3.1%)	137 (11.6%)	1,179 (100%)
	2,666	**202**	**218**	**754**	**3,822**

Note: There were 56 NR/NA cases which were not included in the table.

Table 2.11: Ownership of current residence against previous household income

	Renter		Owner		Total respondents	
	Total	%	Total	%	Total	%
<RM580	253	9.6	66	5.6	319	8
RM580 – 930	450	17.0	124	10.6	574	15
RM931 – <1.5k	702	26.5	236	20.1	938	25
RM1.5k – <2k	558	21.1	262	22.3	820	21
RM2k – <2.5k	320	12.1	183	15.6	503	13
RM2.5k – <3k	151	5.7	107	9.1	258	7
RM3k – <3.5k	115	4.3	87	7.4	202	5
RM3.5k – <4k	38	1.4	39	3.3	77	2
RM4k & above	59	2.2	70	6.0	129	3
	2,646	**100.0**	**1,174**	**100.0**	**3,820**	**100.0**

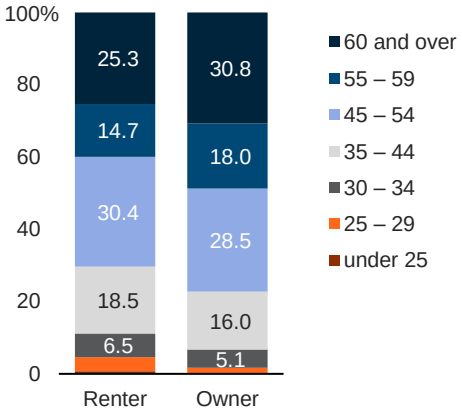
Note: 1. The income figures are self-reported. 2. There were 56 NR/NA cases which were not included in the table.

Table 2.12 shows that there are significant number of heads of households under the rental programmes above the age of 45. This is important to note since any exit policies with the intention of renters becoming homeowners will find difficulties in securing mortgages that are within the duration of 20 to 35 years. It is also important to bear in mind that owner-occupiers who are past the retirement age, assuming that there are unemployment, will also face extra financial difficulties if having to bear maintenance costs. As it stands, all homeowners under PPRs are required to pay maintenance fees to local councils.

[91] This is the reported household income before they moved into the PPR.

Table 2.12: Heads of household by age and ownership of current residence

	Renter		Owner		Total respondents	
	Total	%	Total	%	Total	%
Under 25	20	0.7	2	0.2	22	0.6
25 – 29	103	3.9	18	1.5	121	3.1
30 – 34	175	6.5	61	5.1	236	6.1
35 – 44	496	18.5	192	16.0	688	17.8
45 – 54	812	30.4	342	28.5	1,154	29.8
55 – 59	392	14.7	216	18.0	608	15.7
60 and over	677	25.3	369	30.8	1,046	27.0
	2,675	**100.0**	**1,200**	**100.0**	**3,875**	**100.0**

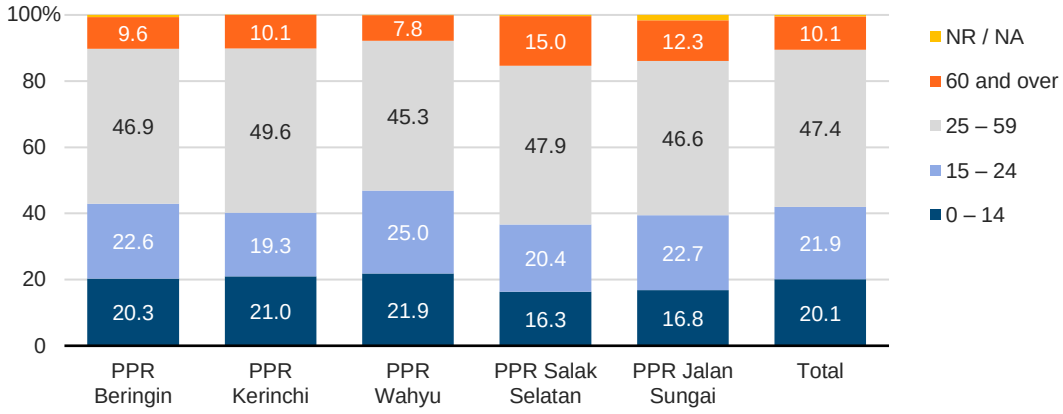


Note: 1. The survey does not capture which household member actually owns/rents the unit. This analysis assumes that head of household owns/rents the unit, which may not necessarily be the case (such as spouse owning the unit and not household head). 2. There were 3 NR/NA cases which were not included in the table.

2.4.2. Population age distribution

About 47% of PPR household members were of prime working age (between 25 – 59 years). Children (0 – 14 years) made up about 20% of all household members, whilst 10% of the residents were of retirement age (60 years and above). Figure 2.6 shows PPR Salak Selatan and PPR Jalan Sungai had a larger proportion of household members that are of retirement age compared to the other PPRs (15% and 12% respectively). Conversely, PPR Wahyu had the largest population of young people, with household members aged 24 and below making up 46.9% of the total population. It should also be noted that household heads were likely to be older, with their median age ranging from 52 to 54 years across the PPRs.

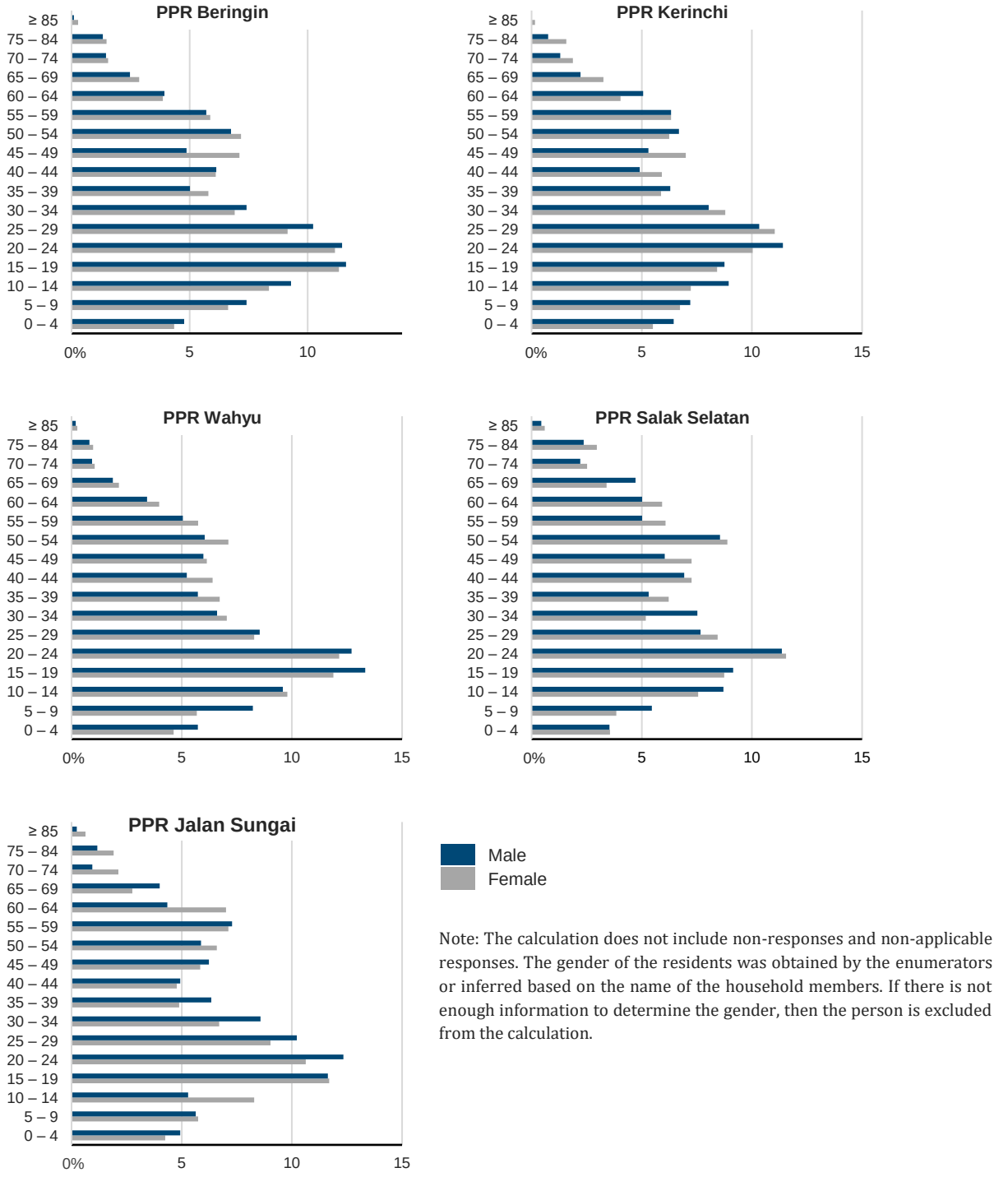
Figure 2.6: Population breakdown by age



Number of residents	PPR Beringin	PPR Kerinchi	PPR Wahyu	PPR Salak Selatan	PPR Jalan Sungai
0 – 14	1,179	1,091	686	222	310
15 – 24	1,317	1,002	786	277	418
25 – 54	2,726	2,579	1,420	652	858
60 and over	558	527	245	204	227
NR / NA	37	1	1	5	30
Total	**5,817**	**5,200**	**3,138**	**1,360**	**1,843**

Figure 2.7 shows that the age structure of the population is double-peaked; there is an initial peak as the household members approached early working age (15 – 24 years), followed by a drop after reaching prime working age (25 – 59 years), after which there is another peak as they approached retirement age (50 – 54 years). This suggests that PPRs residents were bimodally distributed, consisting of younger and older households.

Figure 2.7: Population breakdown by age and gender

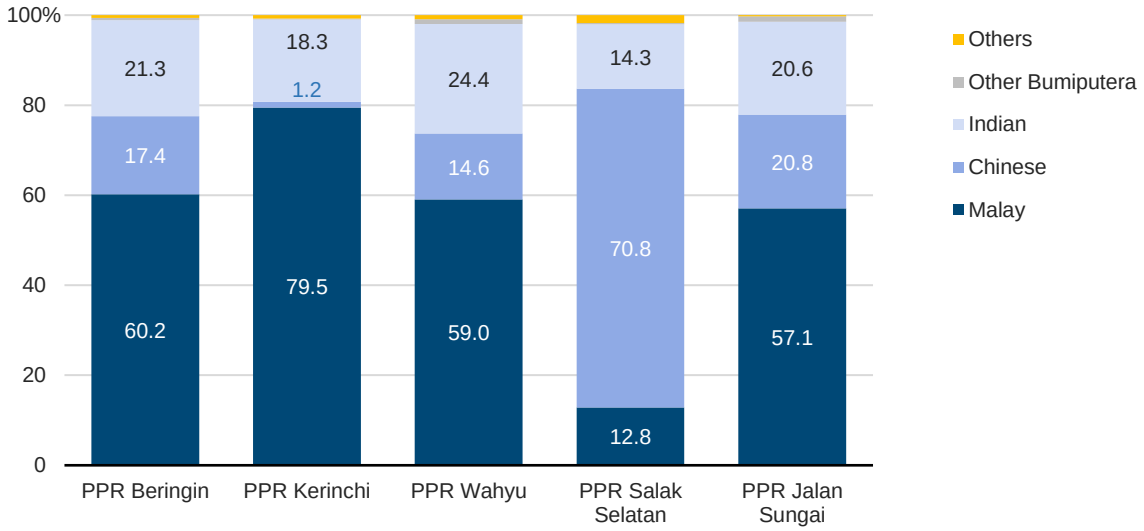


Note: The calculation does not include non-responses and non-applicable responses. The gender of the residents was obtained by the enumerators or inferred based on the name of the household members. If there is not enough information to determine the gender, then the person is excluded from the calculation.

2.4.3. Household ethnicity and citizenship

Figure 2.8 shows the heads of household distributed by ethnicity. Malays made up the majority of heads of household in four of the five PPRs, with the highest proportion of Malay household heads occurring in PPR Kerinchi (79.5%). PPR Salak Selatan served as an exception with Chinese household heads making up almost three quarters (70.8%) of total households. Finally, the number of 'Other Bumiputera' and 'Others' were very small, accounting for less than two percent across the PPRs.

Figure 2.8: Heads of household by ethnicity



Note: The survey only asked the ethnicity of household heads, not the household members. It is inferred that the ethnic composition of the household follows the household head, although it is acknowledged that there is the possibility of the presence of inter-race relationships within the household. Additionally, the ethnicity groupings also include non-citizens. For instance, a household head may be a Malay, but may actually be from Singapore or Indonesia. However, the number of such cases were small.

Most of the heads of household surveyed were Malaysians. Only a small number of the residents were permanent residents or non-citizens (Table 2.13).

Table 2.13: Heads of household by citizenship

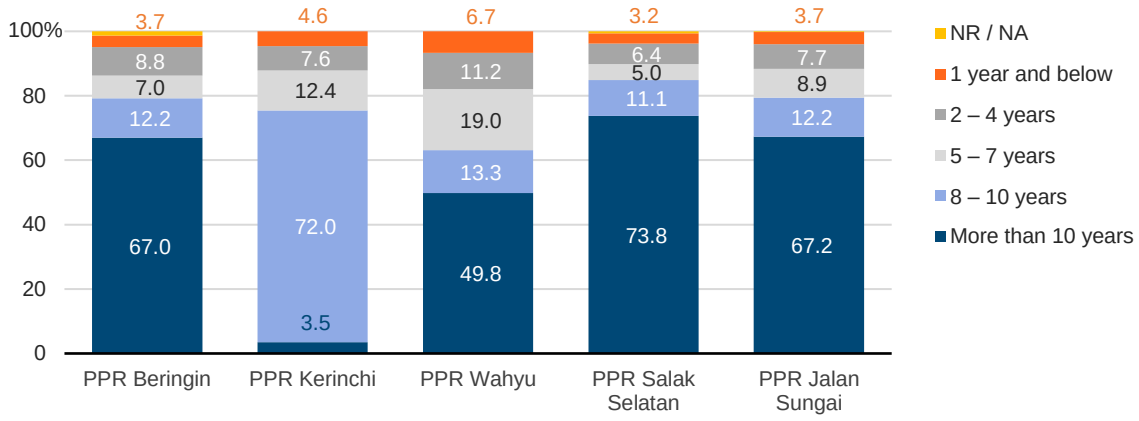
	PPR Beringin	PPR Kerinchi	PPR Wahyu	PPR Salak Selatan	PPR Jalan Sungai
Number of household heads (%)					
Citizens	1,237 (98.3)	1,192 (98.9)	666 (99.6)	342 (99.7)	403 (100.0)
Permanent residents	18 (1.4)	2 (0.2)	3 (0.4)	1 (0.3)	0 (0)
Non-Citizens	3 (0.2)	11 (0.9)	0 (0)	0 (0)	0 (0)

Note: The survey only asked for the citizenship status of household heads, not the household members. It should also be noted that households comprising non-citizens are also less likely to participate in the survey due to their ineligibility for PPR housing.

2.4.4. Comparison of current and previous housing experience

Most of the respondents were long-time residents, with more than 80% of households having established residence for five years or more (Figure 2.9). This phenomenon was most visible in PPR Salak Selatan, where almost three quarters (73.8%) of residents have resided in the PPR for more than 10 years. The percentage of residents who have lived in the PPRs for at least a year was small. Taken together, these numbers indicate that PPRs generally have low turnover rates.

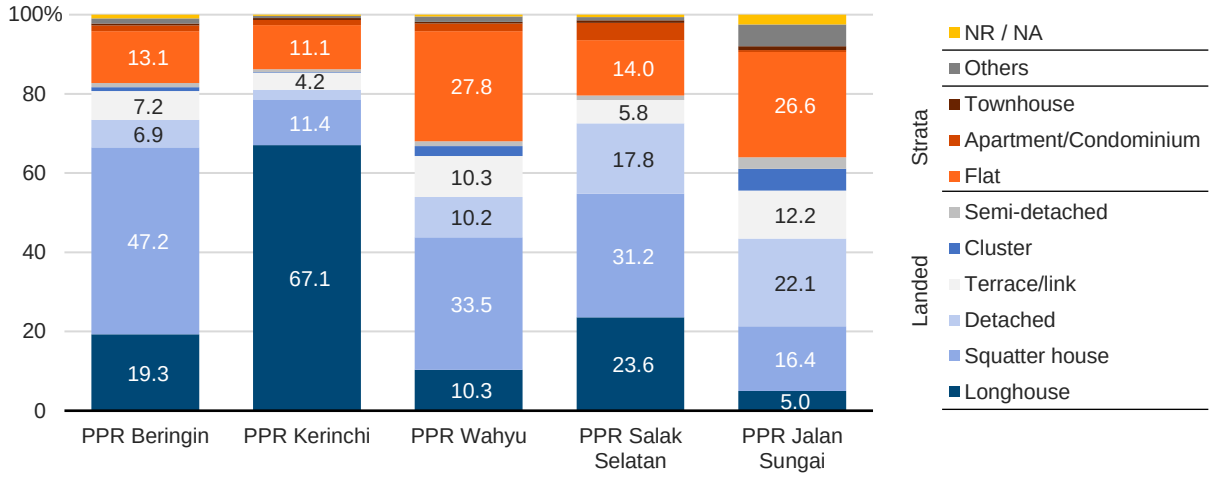
Figure 2.9: Number of years in PPR



Note: Respondents that reported having lived in a PPR before it was built were calculated as having moved in the year it was built.

Respondents were asked about the housing type of their previous residence. Figure 2.10 shows that most residents came from homes that were landed properties. A significant proportion of these were squatter-houses and longhouses; more than 30% of residents in PPR Beringin, PPR Wahyu and PPR Salak Selatan settled from squatter houses while a large proportion of residents in PPR Kerinchi previously occupied longhouses (67.1%). On the contrary, households in PPR Jalan Sungai that reportedly came from these two groups were smaller (squatter house: 16.4%, longhouse: 5%) and more households came from flats (26.6%).

Figure 2.10: Housing type of previous residence

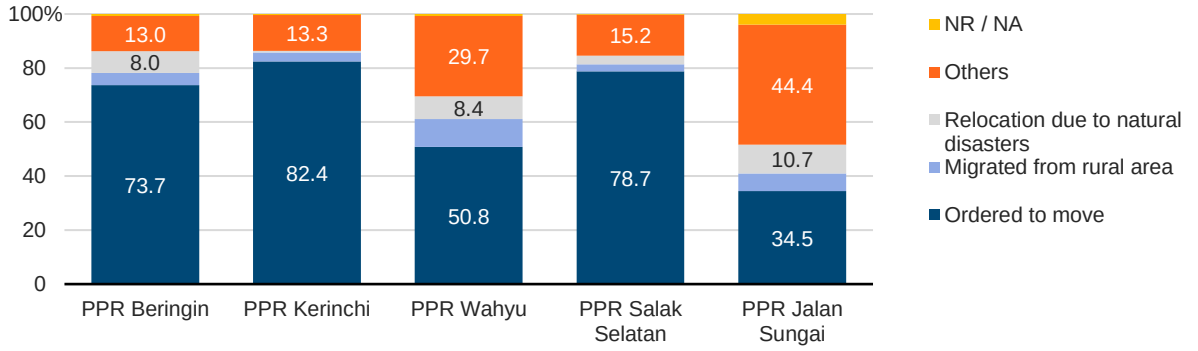


Number of respondents by type of previous residence	PPR Beringin	PPR Kerinchi	PPR Wahyu	PPR Salak Selatan	PPR Jalan Sungai	Total
Longhouse	243	808	69	81	20	1,221
Squatter house	594	137	224	107	66	1,128
Detached	87	32	68	61	89	337
Terrace/link	91	51	69	20	49	280
Cluster	13	2	17	-	22	54
Semi-detached	13	9	8	4	12	46
Flat	165	134	186	48	107	640
Apartment / Condominium	18	16	13	15	2	64
Townhouse	6	6	3	2	4	21
Others	16	7	9	3	22	57
NR / NA	12	3	3	2	10	30
Total respondents	**1,258**	**1,205**	**669**	**343**	**403**	**3,878**

Note: The property types follow the classification by NAPIC, with the addition of squatter house and longhouse.

The first chapter elaborated on the different circumstances under which residents moved into the PPRs. This is reflected in their responses on why they moved, as exhibited by Figure 2.11. At least half of the residents of the KL PPRs reported being 'ordered to move' as their previous residence had been designated for redevelopment. By contrast, about one-third (34.5%) of households in PPR Jalan Sungai were 'ordered to move', while 44.4% of households cited 'other reasons' for moving (such as financial and family reasons).

Figure 2.11: Reasons for moving into current PPR



Number of households according to reasons for moving	PPR Beringin	PPR Kerinchi	PPR Wahyu	PPR Salak Selatan	PPR Jalan Sungai	Overall
Ordered to move for redevelopment	927	993	340	270	139	2,669
Migrated from rural area	57	41	69	9	26	202
Relocation due to natural disasters	101	7	56	11	43	218
Others	164	160	199	52	179	754
NR / NA	9	4	5	1	16	35
Total respondents	**1,258**	**1,205**	**669**	**343**	**403**	**3,878**

Almost 80% of those that were 'ordered to move' were from longhouses or squatter houses (Table 2.14), indicative of the government's policy response to move squatters to PPRs.

Table 2.14: Reasons for moving by housing type of previous residence

	Ordered to move for redevelopment		Migrated from rural area		Relocation due to natural disasters		Others		NR / NA	Grand total
	NoH	%	NoH	%	NoH	%	NoH	%	NoH	
Longhouse	1,152	43.2	5	2.5	39	17.9	22	2.9	3	1,221
Squatter house	952	35.7	24	11.9	89	40.8	59	7.8	4	1,128
Detached	206	7.7	21	10.4	37	17.0	70	9.3	3	337
Terrace/link	95	3.6	54	26.7	11	5.0	115	15.3	5	280
Cluster	22	0.8	6	3.0	6	2.8	20	2.7	-	54
Semi-detached	20	0.7	10	5.0	4	1.8	12	1.6	-	46
Flat	176	6.6	66	32.7	22	10.1	361	47.9	15	640
Apartment/ Condominium	10	0.4	9	4.5	2	0.9	42	5.6	1	64
Townhouse	8	0.3	2	1.0	2	0.9	9	1.2	-	21
Others	15	0.6	3	1.5	2	0.9	34	4.5	3	57
NR / NA	13	0.5	2	1.0	4	1.8	10	1.3	1	30
	2,669	**100.0**	**202**	**100.0**	**218**	**100.0**	**754**	**100.0**	**35**	**3,878**

Note: NoH = number of households

The breakdown of the residents' previous household income demonstrates that the majority of households (81.8%) were earning below RM2,500 before they moved into the PPR. The percentage is about the same (80.5%) for those that were 'ordered to move for redevelopment', This means that 18.7% of those that were 'ordered to move' were earning RM2,500 or more, which is higher than the income eligibility rate[92].

Table 2.15: Reasons for moving by previous household income

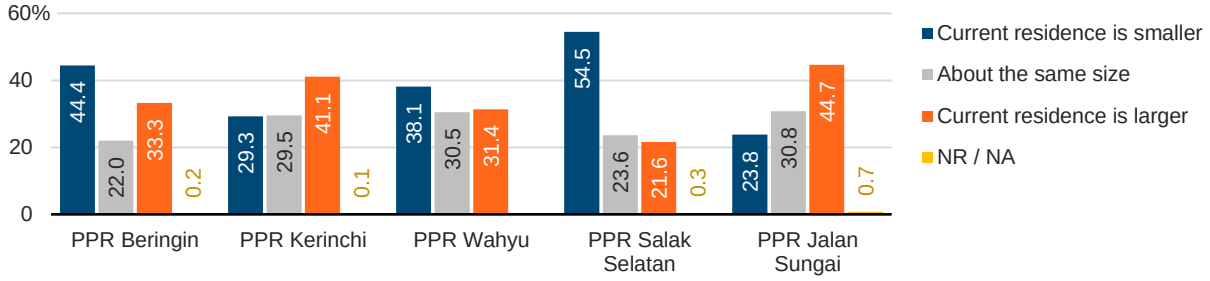
	Ordered to move for redevelopment		Migrated from rural area		Relocation due to natural disasters		Others		NR / NA	Grand total	
	NoH	%	NoH	%	NoH	%	NoH	%	NoH	NoH	%
<RM580	202	7.6	20	9.9	28	12.8	70	9.3	4	324	8.4
RM580 – 930	379	14.2	30	14.9	45	20.6	118	15.6	6	578	14.9
RM931 – <1.5k	650	24.4	39	19.3	62	28.4	185	24.5	9	945	24.4
RM1.5k – <2k	538	20.2	59	29.2	35	16.1	180	23.9	11	823	21.2
RM2k – <2.5k	379	14.2	27	13.4	28	12.8	70	9.3	-	504	13.0
RM2.5k – <3k	201	7.5	8	4.0	4	1.8	44	5.8	1	258	6.7
RM3k – <3.5k	142	5.3	7	3.5	9	4.1	42	5.6	3	203	5.2
RM3.5k – <4k	60	2.2	5	2.5	2	0.9	10	1.3	-	77	2.0
RM4k & above	95	3.6	5	2.5	2	0.9	27	3.6	-	129	3.3
NR / NA	23	0.9	2	1.0	3	1.4	8	1.1	1	37	1.0
	2,669	**100**	**202**	**100**	**218**	**100**	**754**	**100**	**35**	**3,878**	**100**

Note: NoH = number of households. The income figures are self-reported.

[92] Previously the income eligibility rate was RM2,500 per household but in 2016 it was raised to RM3,000. Source: Shamsul Kamal Amarudin (2016).

Respondents were also asked to compare the size of their current PPR unit with their previous residence. In general, residents in PPR Beringin, PPR Wahyu and PPR Salak Selatan were more likely to report that their current PPR unit was smaller than their previous residence, while the reverse was true for respondents from PPR Kerinchi and PPR Jalan Sungai (Figure 2.12).

Figure 2.12: Size of current PPR unit compared to previous residence



Size comparison	PPR Beringin	PPR Kerinchi	PPR Wahyu	PPR Salak Selatan	PPR Jalan Sungai	Total
Current residence is smaller	559	353	255	187	96	1,450
About the same size	277	356	204	81	124	1,042
Current residence is larger	419	495	210	74	180	1,378
NR / NA	3	1	-	1	3	8
Total respondents	**1,258**	**1,205**	**669**	**343**	**403**	**3,878**

Note: The question was phrased as the size of their previous homes compared to their current units. The responses were then inverted to shift the focus to the current PPR unit.

2.4.5. Household dynamics in the PPRs

Household size and type

In general, households in the PPRs tended to have between three to six persons per household, though there are households with more than six members staying in the unit (Figure 2.13). In fact, 14% of the total number of households had more than six persons, with PPR Wahyu having the highest percentage (17.2%). According to the persons-per-bedroom ratio, these households are considered to be living in overcrowded conditions[93], as they have exceeded the two-person-per-bedroom threshold.

[93] The definition of overcrowding varies across international institutions and countries. Four measures commonly used are (i) persons-per-room, (ii) persons-per-bedroom, (iii) unit square footage-per-person and (iv) persons-per-room by unit square foot-per-person. However, the operationalization of the measures also differs. For instance, UN-HABITAT defined overcrowding as more than two people per room (including kitchens and living rooms but excluding bathrooms). A report by the United Kingdom Office of the Deputy Prime Minister (UK ODPM) did not recommend a single overcrowding measure or standard but adopted multiple definitions depending on the variables introduced. The report suggested having more than two persons-per-bedroom to be considered as overcrowding. Source: Nkosi et al. (2019) and ODPM (2004)

This problem is exacerbated with the added provision for similar gendered dependents in a room, as exhibited by the increased overcrowding rate measured in Table 2.16[94]. For instance, a brother and sister should each have their own rooms. Due to the fixed number of bedrooms offered across the PPRs, some units are overcrowded while others are under-occupied by one or two person households.

Figure 2.13: Number of persons per household

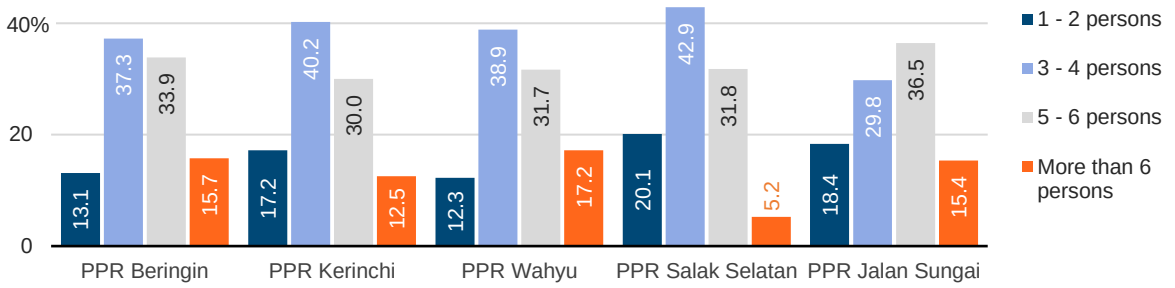


Table 2.16: Households experiencing overcrowding

	PPR Beringin	PPR Kerinchi	PPR Wahyu	PPR Salak Selatan	PPR Jalan Sungai	Total
Number of households	198	151	115	26	71	561
Percentage	15.7%	12.5%	17.2%	7.6%	17.6%	14.5%
Number of households (+ gender)	292	218	148	45	92	795
Percentage	23.2%	18.1%	22.1%	13.1%	22.8%	20.5%

Note: Overcrowding is defined as more than two persons per bedroom. To account for gender, the calculation estimates the number of bedrooms required while specifying that household members sharing a room must be of the same gender (except for married couples).

Table 2.17 details the median and average household size of the PPRs. In the KL PPRs, the median household comprised of four members, while in PPR Jalan Sungai the median household size was five. Meanwhile, the average household sizes show those in PPR Wahyu, PPR Beringin and PPR Jalan Sungai tended to be larger as well. On top of that, Malays typically have larger household sizes compared to the other ethnic groups while the reverse is true for Chinese households. There was also significant variation in the average household size for 'Other Bumiputera' and 'Others'[95].

Table 2.17: Average household size by ethnicity

	PPR Beringin	PPR Kerinchi	PPR Wahyu	PPR Salak Selatan	PPR Jalan Sungai	Overall
Median household size	**4**	**4**	**4**	**4**	**5**	**4**
Average household size	**4.6**	**4.3**	**4.7**	**4.0**	**4.6**	**4.5**
Malay	4.8	4.4	5.0	4.9	4.8	4.7
Chinese	4.0	3.1	3.5	3.7	3.6	3.7
Indians	4.7	4.0	4.7	4.2	4.7	4.5
Other Bumiputera	5.2	3.7	5.4	5.0	6.2	5.3
Others	5.9	3.2	3.8	5.7	1.0	4.5

[94] For instance, Section 325 of UK's Housing Act 1985 provides that "there is overcrowding wherever there are so many people in a house that any two or more of those persons, being ten or more years old, and of opposite sexes, not being persons living together as husband and wife, have to sleep in the same room".

[95] However, as previously mentioned, these two groups accounts for less than two percent of total households surveyed.

Figure 2.14 shows the types of households in the PPRs, while Figure 2.15 lays out the relationship between the types of households and household size. Households in the PPRs largely consisted of families, with nuclear families accounting for around 64% of total households, followed by extended families at 26% (Figure 2.14). In contrast, households made up of single members and households with other related members made up about 5% and 3% of total households respectively. It can also be observed that nuclear family households are smaller in size while extended family households are bigger in size.

Figure 2.14: Household type

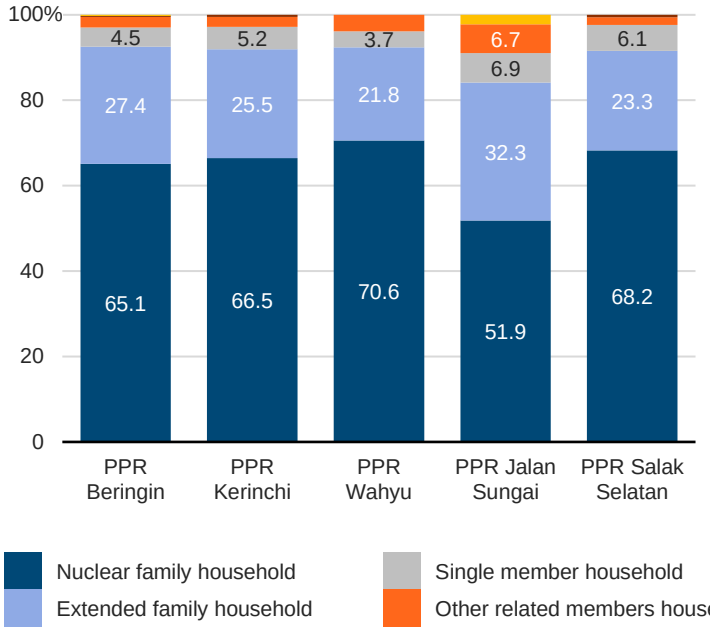
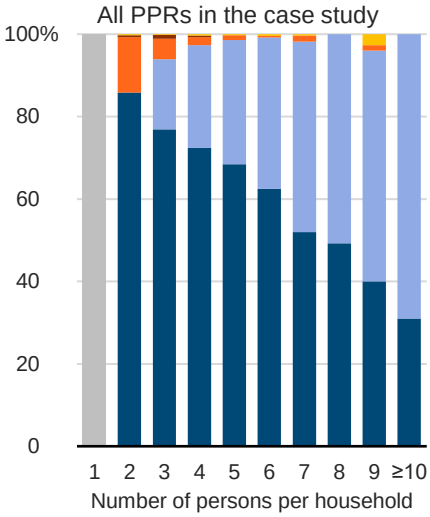


Figure 2.15: Household type and household size



Note: The respondents were asked to list their household members and their relationship with the household head. This information was then used to group the household according to the classification used by DOS (2011). The definitions are as follows:

1. Nuclear family household = Households that consisted of members related by blood, marriage or adoption. Therefore, heads of household with: (1) spouse, or (2) spouse and unmarried child / children of head, or (3) unmarried child / children of head, or (4) parent (s) of head.
2. Extended family household = Households that consisted of a nuclear family as well as parents, or married children or other related members.
3. Single member household = Households that consisted of only one person.
4. Other related member household = Households that consisted of the head of household and members related to the head (aside from parents or children). These households may also include unrelated persons, as long as some of them are related to the head of household.
5. Unrelated members household = Households that consisted of the head of household and members unrelated to the head.

Gender and marital status of household head

Almost three quarters of households were headed by men (Figure 2.16) who were more likely to be married (Figure 2.17). Household heads who were women, a much smaller group, were typically widowed, divorced or separated. In other words, households' heads who were single were also more likely to be women.

Figure 2.16: Heads of household by gender

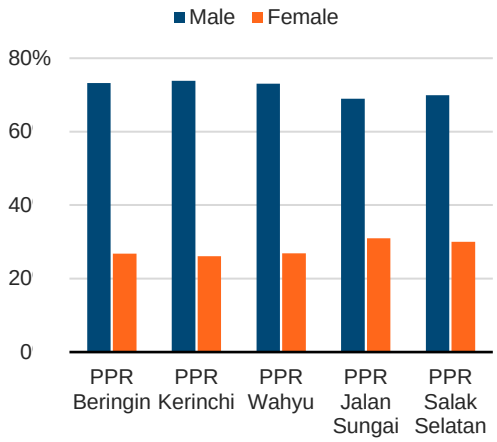
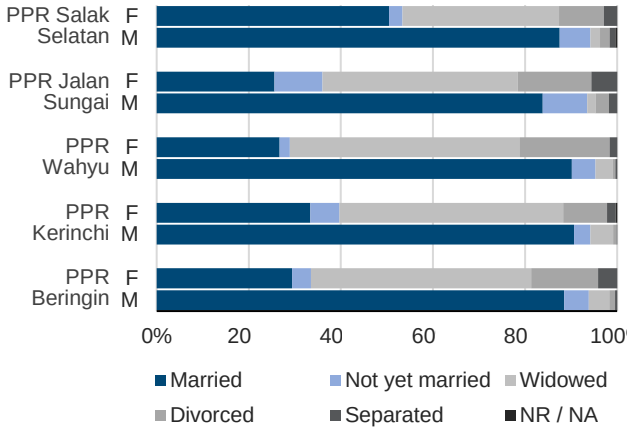


Figure 2.17: Heads of household by gender and marital status



M = Households headed by men, F = Households headed by women

A decomposition of household type by gender of household head reveals that households headed by women comprise a larger percentage of extended family households compared to households headed by men (Figure 2.18). Upon closer inspection, households' heads who were single women also tend to have more household members (Figure 2.19). One possible explanation is that household heads who are single women draw support from their extended families[96] (such as providing monetary contribution or helping with childcare).

Figure 2.18: Household type by gender of household head

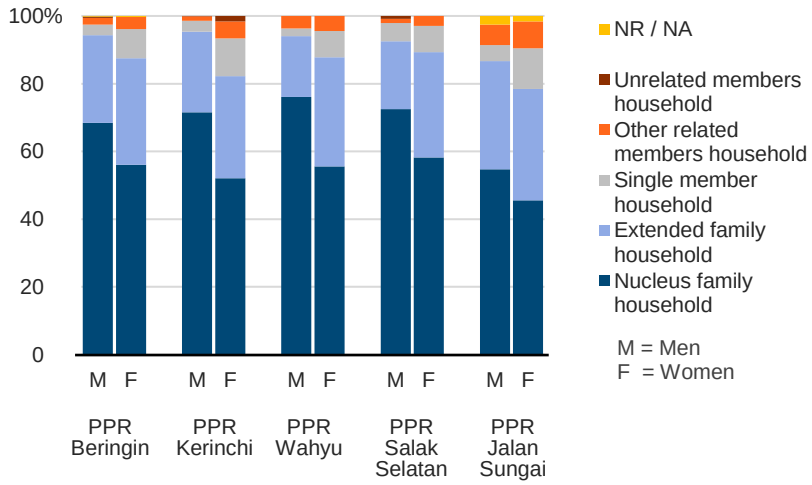
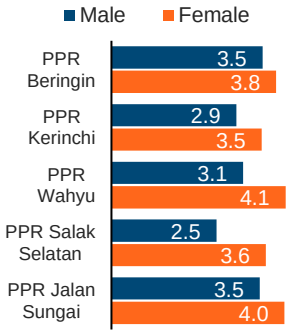


Figure 2.19: Average household size of single household heads



Note: Defined as those without a spouse. The calculation does not include heads of household with unmarried partners.

[96] Villarreal and Shin (2008)

Households with disabilities

Table 2.18 shows the breakdown of households with disabilities. On average, about 1 in 10 households in the PPRs reported having at least one member with a disability. However, the proportion of disabled persons in the total population is relatively small across the PPRs, and there were few heads of household with disabilities. Nevertheless, the presence of these vulnerable residents highlights the need to ensure that the PPR's design are functional and accessible. For instance, the building design should consider placing ramps in common areas and installing grab bars or handrails within the unit. Another example would be making sure that there are no obstacles blocking routes into and through the blocks[97].

Table 2.18: Households with disability

	PPR Beringin	PPR Kerinchi	PPR Wahyu	PPR Salak Selatan	PPR Jalan Sungai
No. of disabled persons	155	111	116	32	74
Percentage of persons with disability out of total persons residing in PPR*	2.7%	2.1%	3.7%	2.4%	4.1%
Percentage of households having at least one disabled member*	10.8%	7.9%	14.8%	8.2%	15.3%
Percentage of heads of household that are disabled	4.7%	3.2%	6.9%	2.3%	7.2%

Note: The figures are self-reported by the respondents and not official diagnoses. They also do not detail on the type nor extent of the disability. * Calculation excludes non-responses.

[97] From the site visit, it was observed that some PPR blocks had broken furniture placed at or near the block's staircase which restricted movement in the passageway.

2.4.6. Household income and employment

Table 2.19 shows the respondents' household income at the time of the survey. Less than 20% of KL PPR households earn below the poverty line, while 45.4% of PPR Jalan Sungai households fall into the same bracket. There were also some households which earned above the maximum income threshold for PPRs, with PPR Kerinchi and PPR Salak Selatan having a notably large percentage of such households.

Overall, it appears that the PPRs were successful in targeting lower-income groups, as evident from the households' median income range. To put this into perspective, the median monthly household income in 2016 for Kuala Lumpur was RM9,073, while in Pulau Pinang it was RM5,409.

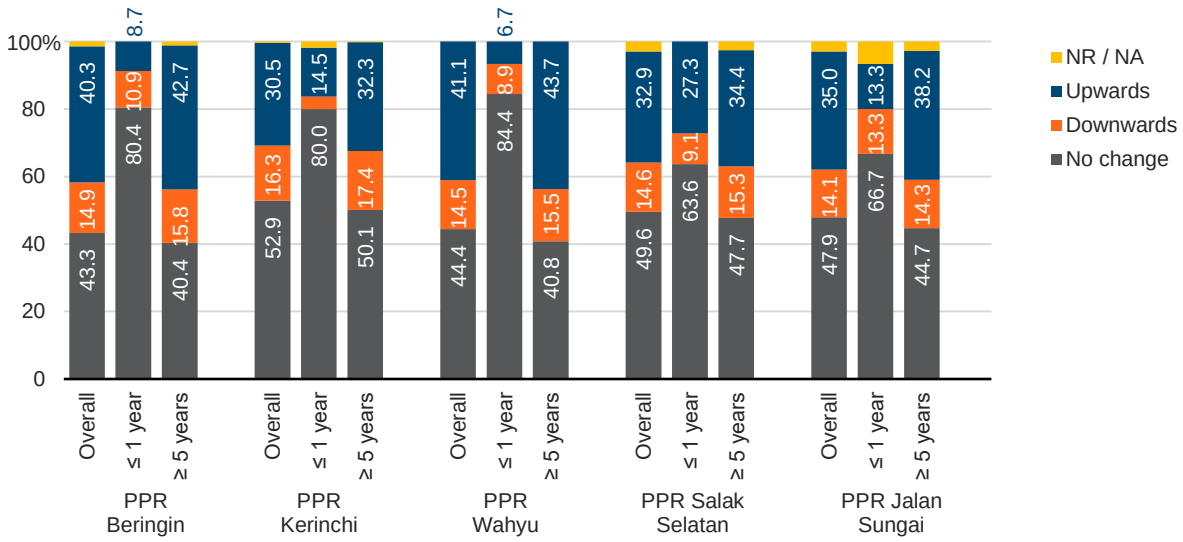
Table 2.19: Household income

Current income	PPR Beringin		PPR Kerinchi		PPR Wahyu		PPR Salak Selatan		PPR Jalan Sungai		Total	
	NoH	%	NoH	%	NoH	%	NoH	%	NoH	%	NoH	%
<RM580	122	9.7	119	9.9	49	7.3	30	8.7	83	20.6	403	10.4
RM580 – 930	137	10.9	88	7.3	75	11.2	15	4.4	100	24.8	415	10.7
RM931 – <1.5k	249	19.8	182	15.1	143	21.4	41	12.0	107	26.6	722	18.6
RM1.5k – <2k	280	22.3	211	17.5	163	24.4	62	18.1	58	14.4	774	20.0
RM2k – <2.5k	171	13.6	196	16.3	95	14.2	49	14.3	25	6.2	536	13.8
RM2.5k – <3k	108	8.6	107	8.9	56	8.4	38	11.1	10	2.5	319	8.2
RM3k – <3.5k	100	7.9	140	11.6	43	6.4	43	12.5	8	2.0	334	8.6
RM3.5k – <4k	28	2.2	46	3.8	15	2.2	17	5.0	2	0.5	108	2.8
RM4k & above	58	4.6	115	9.5	30	4.5	39	11.4	4	1.0	246	6.3
NR / NA	5	0.4	1	0.1	0	0.0	9	2.6	6	1.5	21	0.5
	1,258	**100.0**	**1,205**	**100.0**	**669**	**100.0**	**343**	**100.0**	**403**	**100.0**	**3,878**	**100.0**
Median income range	RM1.5k – <2k		RM2k – <2.5k		RM1.5k – <2k		RM2.5k – <3k		RM931 – <1.5k		RM1.5k – <2k	

Note: NoH = number of households
The income figures are self-reported. In 2014, Malaysia's Poverty Line Income (PLI) for was RM930, and the Hard-core Poverty Line Income was RM580.

The next step is to graph out whether households have 'moved up' or 'moved down' in terms of their household income after relocating to the PPRs. In the survey, respondents were also asked their income brackets prior to moving. Households that moved up a bracket are labelled as having an 'upwards' movement in their household income while those that moved down are labelled as having a 'downwards' movement. Households which continued to be in the same income bracket are categorised as experiencing 'no change'. Figure 2.20 shows that more than 33% of households recorded an increase in their household income, although a much larger proportion of households reported no changes (more than 40%). Households are more likely to record income changes when their tenure increases (5 years or more).

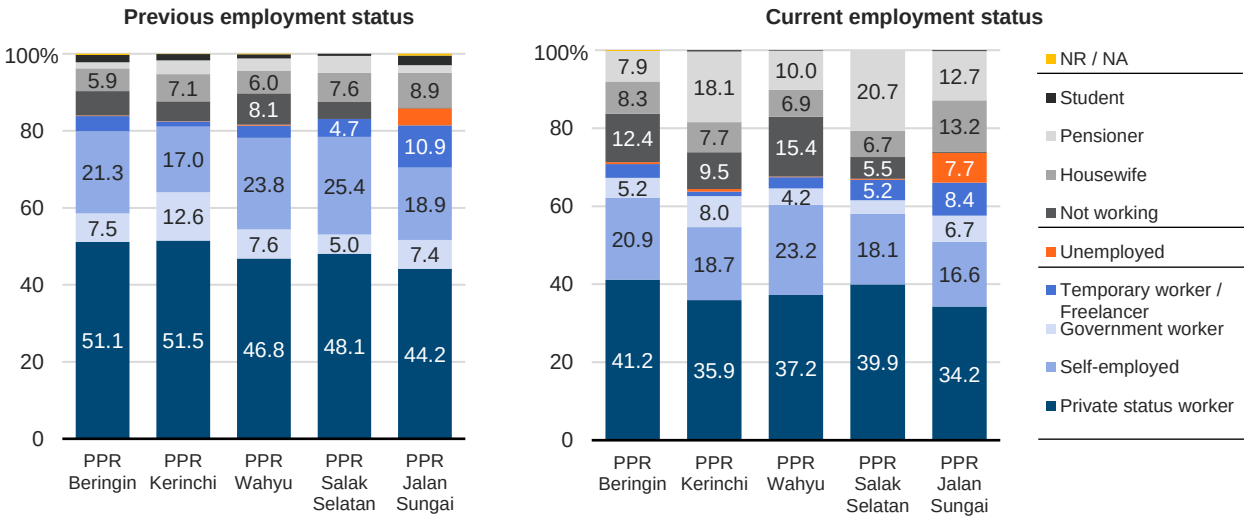
Figure 2.20: Changes in household income after moving into PPR, by years of occupancy in PPR



The survey also asked for the head of household's employment status before and after moving. Figure 2.21 shows that the proportion of employed household heads decreased and the proportion of household heads outside the labour force increased. This is not surprising, considering that heads of household were generally older and thus were more likely to be retired or to have reached retirement age. Nonetheless, there is still the possibility that their employment were fortified due to moving into the PPRs. The effect of relocation will be expanded further in the spatial analysis in Chapter 4.

Additionally, approximately 20% of household heads were self-employed and/or earned income through their small businesses. The study also observed that some PPR households work in informal employment e.g. as petty traders, tailors, and freelancers. Consequently, they may lack the social protections and security that formal workers enjoy such as paid leave, EPF and SOCSO coverage as well as medical coverage.

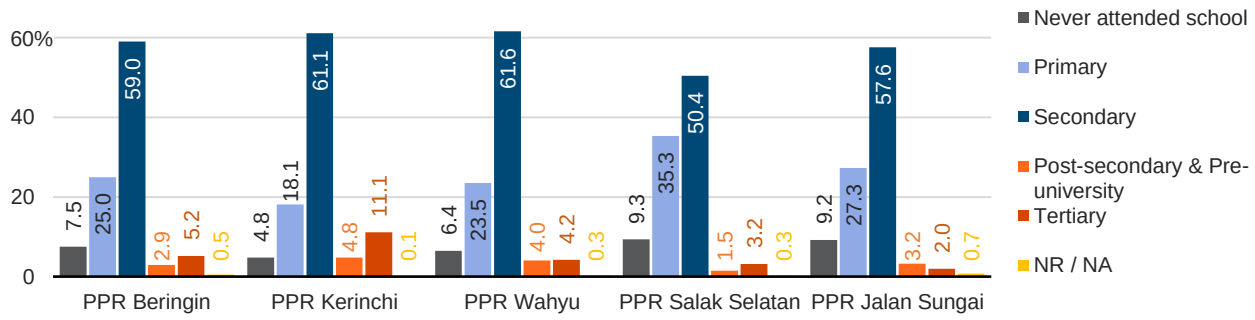
Figure 2.21: Previous and current employment status of household head



Note: The employment status follows the classification by DOS.

The findings also show that 59% of the heads of household attained education up to secondary levels, while around 7% of them have never attended school (Figure 2.22). Having a lower level of education means that their earning capability is limited, and they are more likely to work in low-skilled jobs.

Figure 2.22: Educational attainment of household head



Note: The educational attainment status follows the classification by DOS.

2.5 Discussion and Conclusion

This report explores the impact of different densities in housing units and building complexes, and residents' spatial ecosystem pre-and-post-relocation through residential satisfaction surveys. This chapter introduced the selected PPRs, detailing the complexes' building design and available amenities, followed by the residents' profile. The findings are summarised as below:

1. All PPRs were constructed following a standard, uniform design, except for PPR Jalan Sungai. The main difference between these PPRs are their densities (unit per hectare). Within the sample size, PPR Jalan Sungai has the highest density of 626 units per hectare, while PPR Wahyu has the lowest density of 234 units per hectare. The relationship between density and household's satisfaction will be further explored in the next chapter.

2. The type of amenities provided varies between PPRs, which infers that the residential environment and living experiences of respondents will be different. For instance, households living in PPR Wahyu are able to access a wider variety of amenities (e.g. community hall, mosque, childcare centres) as compared to residents in PPR Salak Selatan, where none exists. However, in PPR Salak Selatan, the neighbourhood's wet and dry market is in close proximity to the housing complex and is accessible by a 2-minute walk. The effect of these differences to households will also be discussed in the next chapter.

3. It is observed that households come from different experiences and backgrounds, depending on how they were given access to the social housing programmes. It is important to appreciate that the respondents' profile is constrained by:

    a) the existing PPR eligibility criteria (which are based on citizenship, aged 18 years and above, household income below RM3,000 and do not own a house);
    b) households that were offered PPR units through the squatter resettlement programme, and
    c) the selection criteria for the case studies:
        i) states with high population densities
        ii) states with high urbanisation rates
        iii) PPRs with more than 500 units per complex
        iv) PPRs built after 2000, with the building complex exceeding 10 years in use

4. A breakdown of household dynamics shows that households living in the PPRs reflected a wide range of household compositions (e.g. nuclear family households: 64% and extended family households: 26%) and size (ranging from 1 to more than 6 persons per unit -with median household size of mostly 4). In contrast, households which were made up of single members and those with other related members made up about 5% and 3% of the total respectively. It can also be observed that nuclear family households are smaller in size while those with extended family are larger. This highlights the limitation of a standard three-bedroom unit which does not cater to the different household compositions and sizes, resulting in some units being overcrowded while others are 'under-occupied'.

5. The majority of PPR residents (69%) moved to PPR due to forced relocation orders. Out of this, 79% lived in landed shelters- longhouses and squatter homes, prior to the relocation process. Less than 5% residents are inward rural-urban migrants.

6. Residents under the 'relocation/ordered to move' category had a significantly larger percentage of tenants (64%) than owners (36%). A further breakdown of housing ownership against previous household income depicts more owners than tenants in higher income brackets, where 41.3% of the owners had a household income of RM2k or higher, versus 25.5% for tenants. These results suggest that respondents became owners due to their own purchasing power rather than the units were 'handed over' to residents who were under the forced relocation category. This is quite different from the overall trend of units purchased in PPRs, where the percentage of homeowners are higher (74%) in the income brackets of RM2.5K and below.

7. Almost three quarters of households are headed by men, more likely to be married. Women household heads, a much smaller group, are typically widowed, divorced, or separated. Household heads who are single are most likely to be women. A decomposition of household type by gender reveals that households headed by women comprise a larger percentage of extended family households as compared to households headed by men. Upon closer inspection, household heads who are single women also tend to have more household members.

8. About 42% of PPR household members are of prime working age (between 25 – 59 years). Most of them work (67.2%). Household heads are also likely to be older, with their median age ranging from 52 to 54 years across the PPRs. Household heads aged 45 and above have the highest percentage of ownership (76.5%) out of the total owners in PPRs.

9. The number of households in poverty for the 5 PPRs is more than 60% (those earning less than PLI of RM2, 208) with more than 21 % considered as 'hardcore poor' (earning less than food PLI of RM1, 038). Poverty is higher for households headed by pensioners (72.1%), housewives (70.5%), unemployed/not working (70.6%) and part-time workers (80.6%).

10. 35% of PPR head of households are self-employed or work part-time, meaning there is limited social protection and the ability to secure mortgages. About 57% work in the private sector and 9% in the government sector. 13% have tertiary education, suggesting even graduates require social housing.

11. It appears that the PPRs are successful in targeting lower-income groups, as evident from the households' median income range which was RM1.5k to less than RM2k. Overall, 21% of the total respondents reported income below the poverty line, with PPR Jalan Sungai having the highest percentage (45%). However, some households reportedly earned more than the maximum income threshold RM3,000 for PPR eligibility- though this might be due to households that were on the relocation programme and not filtered through income eligibility criteria.

12. Half of the residents are tenants. Additionally, more than 80% of the total respondents have been in residence for at least five years or more. This infers a very low turnover ratio in PPR housing units.

13. On average, 1 in every 10 households reported having at least one member with a disability. The presence of disabled persons within the PPRs highlights the need to ensure that the design of these flats is functional and accessible.

Photo 2.3: Life at the PPR

CHAPTER 03

USER SATISFACTION SURVEYS OF PPRs AND THE ROLES OF RESIDENTS' ASSOCIATION AND THE STATE 70

CHAPTER 3

USER SATISFACTION SURVEYS OF PPRs AND THE ROLES OF RESIDENTS' ASSOCIATION AND THE STATE

This chapter consists of four sections which are: findings from the residential satisfaction survey, the functions of Residents' Associations, the role of local authorities, and conclusions and policy implications. The section details are as follows:

- **Section 3.1 | Findings on Residential Satisfaction**
  This section focuses on the satisfaction levels of the residents, exploring the differences in satisfaction between the PPRs and across various housing aspects (e.g. physical design, personal spaces and shared spaces, safety and security). As shown in the previous chapter, the PPRs within the case study contained different densities and amenities. This is supplemented by a series of analyses to tease out factors significant for understanding the variation in satisfaction, specifically the effect of density on units versus complexes (i.e. 'personal spaces' versus 'shared spaces'). These factors will then serve as inputs towards developing measures to prevent the deterioration of PPRs into slums.

- **Section 3.2 | Residents' Associations—Social ties and Organizations**
  This section examines Residents' Associations—formal community organizations within the PPRs. Aside from the Residents' Associations, residents also participated in other community organizations such as *Rukun Tetangga* and Joint Management Body (JMB). The team conducted community engagements to: (1) examine the profile and responsibilities of the community associations, (2) supplement the findings from the satisfaction survey as well as (3) to understand the relationship between community groups and local authorities. This section concludes with observations with of 'bottom-up' initiatives by the Residents' Associations to improve living conditions and resolve extant problems in the community. Examples of two preferential practices—PPR Wahyu and PPR Jalan Sungai—are illustrated in Box 3.3.

- **Section 3.3 | The Role of the Local Council**
  This section describes the role of the local council in managing the housing complex. For the purposes of the study, only two major roles of local councils are examined closely which are: (1) the creation of a positive living environment and (2) facility maintenance. On the first role, the report ties in with findings on residents' satisfaction from section 4.1 and outlines specific aspects that the local council should focus on in order to improve residents' living conditions. In terms of maintaining the social housing complex, this section examines the existing maintenance practices, then suggests recommendations to improve the mechanism; namely enforcing scheduled maintenance, conducting a building conditions survey and implementing life-cycle-costing for future PPRs.

- **Section 3.4 | Conclusions and Policy Implications**
  This part ties up the findings from the previous three sections and discusses policy implications.

3.1 Findings on Residential Satisfaction

The previous chapter gave insights on the residential environment of PPRs (i.e. levels of density, physical design and variety of amenities) based on the case studies as well as the residents' demographic profile (i.e. household size and composition as well as previous housing experience).

It was observed that despite following a standard, uniform design (except for PPR Jalan Sungai), the PPRs possessed different density levels which may have impacted their residents' housing experiences. Additionally, the amenities accessible to the residents also differed by PPR, with some enjoying a wider range of amenities than others. This suggests that the respondents' residential environment, and thus their overall housing experience, largely depended on which PPR they lived in.

Furthermore, Section 3.4 on Households' Profile illustrates the heterogeneity of the residents in terms of their socio-demographic profile and previous housing experience. This is expected to influence the respondents' expectations and assessment of their current PPR unit.

The analyses on satisfaction aim to answer the following questions:

1. To what extent are PPR residents satisfied with their unit, complex and the PPR as a whole? And are there variations between PPRs?
2. Which factors are most important in understanding the differences in satisfaction levels of unit, complex, and overall PPR—once individual factors are controlled for?

3.1.1. Level of satisfaction and variation between PPRs

The level of satisfaction serves as a gauge in determining whether the PPRs are meeting the housing needs of their residents. Respondents were asked to indicate their levels of unit, complex, location and overall satisfaction[98]. The level of housing satisfaction is measured using a seven-point Likert scale where: 1—very dissatisfied, 2—somewhat dissatisfied, 3—dissatisfied, 4—average, 5—satisfied, 6—somewhat satisfied and 7—very satisfied.

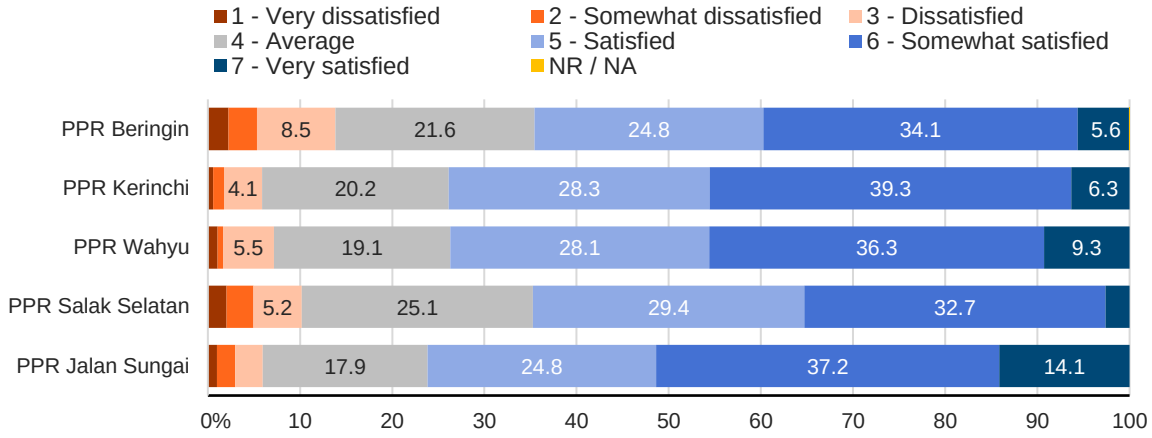
Figure 3.1 shows the distribution of the responses while Table 3.1 depicts modal satisfaction. A notably higher percentage of respondents (70.2%) reported satisfaction with the unit (selected 5 or higher) compared to those who reported satisfaction with the complex (55.1%) and overall satisfaction (58.5%). Among the PPRs, tenants from PPR Jalan Sungai, PPR Jalan Kerinchi and PPR Wahyu appeared relatively more satisfied, as exhibited by a higher percentage of satisfied respondents across the three measures. Conversely, residents from PPR Beringin and PPR Salak Selatan exhibited a much lower percentage, and the differences between these PPRs compared to the rest were more pronounced for their satisfaction with the complex.

The modal scores of unit satisfaction were six for all PPRs, indicating a high level of satisfaction among the residents. However, this was not the case for complex and overall satisfaction, where the modal scores for PPR Beringin and PPR Salak Selatan were four, lower than the rest, which scored six.

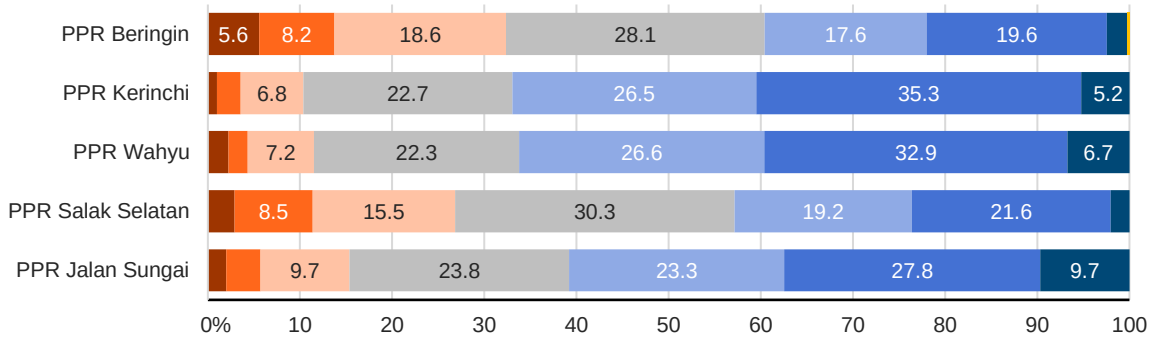
[98] See Appendix A for information on the survey methodology and Appendix B for the detailed questionnaire.

Figure 3.1: Satisfaction with unit, complex and overall PPR

a. Satisfaction with unit



b. Satisfaction with complex



c. Overall satisfaction

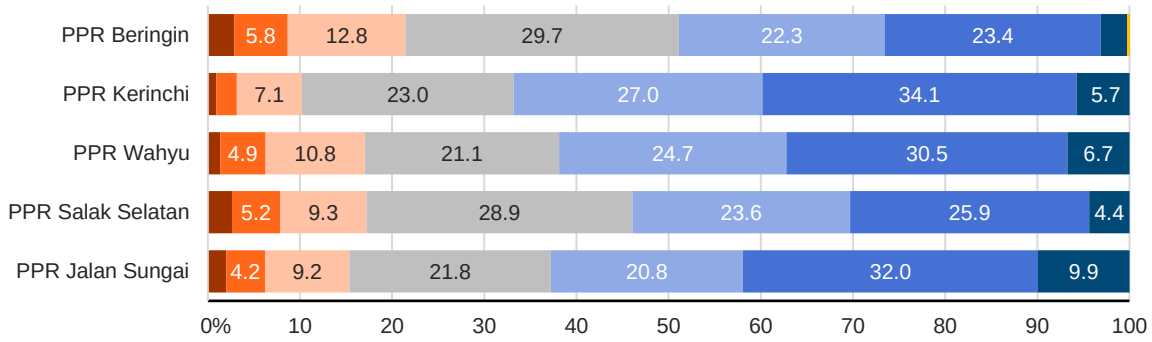


Table 3.1: Mode of respondents' satisfaction

Mode	PPR Beringin	PPR Kerinchi	PPR Wahyu	PPR Salak Selatan	PPR Jalan Sungai
Unit satisfaction	6	6	6	6	6
Complex satisfaction	4	6	6	4	6
Overall satisfaction	4	6	6	4	6

The critical question emerging from high satisfaction levels is whether they are a product of tenants having low expectations and therefore not able to properly assess whether their living conditions[99]. Therefore, the context of the answers is critical. To address this, respondents were asked to indicate their satisfaction with different components of their residential environment, from the size of the unit to the overall level of safety in the PPR. Several indices were then constructed to measure the satisfaction levels of the different components[100]. These indices were divided into two groups—unit and complex (seven sub-indices under unit and six sub-indices under complex). Table 3.2 provides a summary of the measures included in the indices.

Table 3.2: Components of the residential satisfaction indices

Index	Sub-indices	Measures
Unit	Shared spaces	Size of living room, size of dining room, size of kitchen, size of yard
	Personal spaces	Size of bathroom, no. of toilets
	Overcrowding	Size of bedroom, no. of bedrooms
	Environmental physics	No. of windows, comfort of unit, adequate ventilation, adequate natural lighting, level of water pressure, level of noise within/surrounding unit, level of odour surrounding home
	Others—Privacy	Level of privacy within/surrounding unit
	Others—Safety	Level of safety within/surrounding unit
	Others—Design	Overall design of unit, quality of wall, quality of floor, no. of electrical sockets
Complex	Building—Floor sensitive	No. of lifts, state of lifts, location of refuse chamber, quality of stairs around building block
	Building—Non-floor sensitive	Quality of corridor around building block, state of safety railings in building block
	Paid shared spaces	Availability of pre-schools within PPR complex, availability of convenience stores within PPR complex, availability of internet centres within PPR complex, availability of eateries within PPR complex
	Free shared spaces	State of community hall, size of *surau*, state of *surau*, state of playground, no. of parking spaces
	Safety and security	Overall level of security in PPR, overall level of safety in PPR
	Sanitation and cleanliness	Overall cleanliness of building block, size of refuse chamber, state of drains around building block

Respondents' levels of satisfaction with their unit and complex (as calculated in the indices) are presented in Table 3.3. Respondents appeared generally satisfied as indicated by the many indices scoring higher than the midpoint of the index at 57.1. These differences in scores highlight areas which succeeded (or otherwise) in meeting tenants' residential needs[101].

[99] This is because tenants of public housing usually have limited housing options which in turn lead to reduced expectations and thus a higher likelihood of reporting higher satisfaction levels when surveyed. Source: Birks and Southan (1992)
[100] Refer to Appendix B for more information on the index calculation method.
[101] One thing to keep in mind is that the PPRs share the same residential building design (except for PPR Jalan Sungai) but differ in terms of amenities provided (Refer to Chapter 3).

Table 3.3: Average scores of unit and complex satisfaction indices

	PPR Beringin	PPR Kerinchi	PPR Wahyu	PPR Salak Selatan	PPR Jalan Sungai
Unit Index	**64.3**	**66.9**	**67.8**	**63.5**	**71.2**
Overcrowding	67.5	67.9	70.5	65.2	74.1
Personal spaces	67.1	68.0	71.0	65.3	72.7
Environmental physics	66.7	68.4	68.8	66.2	71.6
Design	65.7	68.0	69.5	62.1	72.5
Privacy	61.0	65.7	64.9	63.1	66.9
Shared spaces	58.9	63.4	64.1	59.4	70.0
Safety	54.2	63.9	61.0	59.2	63.5
Complex Index	**56.9**	**64.7**	**66.8**	**54.8**	**64.8**
Paid shared spaces	69.4	77.2	76.5	65.3	71.9
Free shared spaces	60.1	65.5	70.3	48.9	68.4
Building—Non-floor sensitive	58.0	64.3	64.9	58.6	62.9
Sanitation and cleanliness	55.5	62.9	62.8	58.8	64.0
Building—Floor sensitive	48.2	56.9	63.0	49.3	55.8
Safety and security	45.5	58.3	53.9	51.1	64.0
No. of observations	**1,080**	**1,162**	**626**	**241**	**364**

Min Max

Note: The table is highlighted based on the range of the responses for the respective PPR. Therefore, the minimum and maximum values are different for each PPR/column.

As suggested by (Figure 3.1), residents appeared more content with their units than their complex. In terms of the residential environment within the unit, residents were less satisfied with 'shared spaces' (i.e. living room, dining room, kitchen and yard) compared to 'personal spaces' (i.e. bathroom and toilet). The 'overcrowding' sub-index which looks at size and number of bedrooms showed respondents reporting relatively high scores compared to other sub-indices. Residents were also content with the 'environmental physics' (i.e. comfort, ventilation, natural lighting, etc.) and 'design' of the unit (i.e. overall design, wall, floor, electrical sockets). 'Safety' of the units appeared to be a cause for concern for all PPRs as indicated by the low safety sub-index scores.

The high-rise nature of the complex appears to an impact on liveability. This was assessed through the 'building—floor sensitive' index (i.e. lifts, stairs, location of refuse chamber), demonstrating residents' discontent with issues that vary by floor level. The 'building—floor sensitive' index had marginally lower scores than the non-floor sensitive index (i.e. corridors and safety railings).

Residents also seemed more satisfied with 'paid shared spaces' (i.e. pre-schools, convenience stores, internet centres, eateries) than 'free shared spaces' (i.e. community hall, *surau*, playground, parking space). PPR Wahyu and Kerinchi scored significantly higher in terms of paid shared spaces than the other three PPRs, a reflection of access to a wider range of amenities. In contrast, PPR Salak Selatan had substantially lower scores on free shared spaces, which indicate residents' discontent with the availability of public amenities within the complex. Finally, 'safety and security' (i.e. overall safety and security of PPR) as well as 'sanitation and cleanliness' (i.e. overall cleanliness, size of refuse chambers, state of drains) also contributed to bringing down respondents' satisfaction with their complex, as exhibited by the much lower scores of these sub-indices relative to other sub-indices.

These results highlight the aspects of the PPRs that can still be improved and merit further investigation. For instance, the low satisfaction scores of the safety and security index suggests that safety and security are important issues for residents, which should be addressed by the relevant authorities.

To gain a deeper understanding of the reasons behind respondents' satisfaction (and dissatisfaction), the survey also asked for suggestions of action that could be undertaken to improve their overall satisfaction with the PPR. Some of the issues and concerns highlighted involved the residential environment such as lifts, parking spaces, safety and cleanliness (see Box 3.1 for more information).

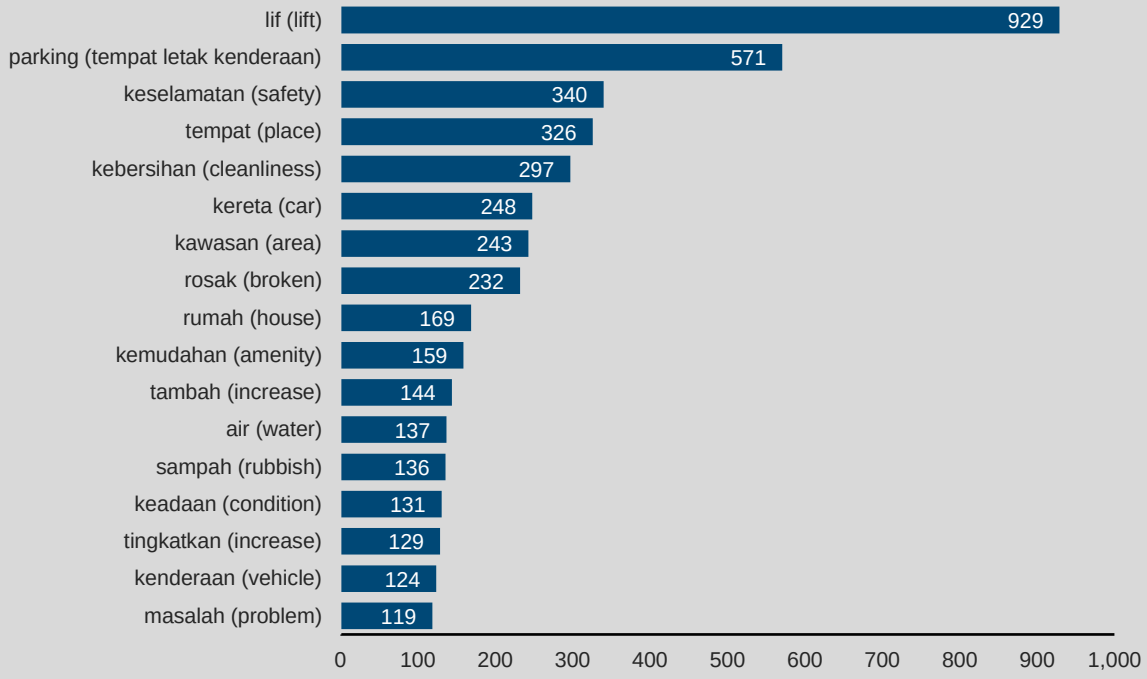
Box 3.1: PPR residents' aspiration

In addition to the satisfaction survey, the research team collected feedback from residents on how to improve the PPRs. However, the responses were limited to the KL-PPRs as this question was included during the Phase 2 of the survey. The question was *'Apakah cadangan anda untuk menaikkan tahap kepuasan anda dengan keadaan PPR secara keseluruhan?'* (What is your suggestion to increase your satisfaction with the PPR as a whole?).

A text analysis was conducted on the responses to identify residents' concerns and possible challenges faced while living in the PPRs. Based on word frequencies (Figure 3.2), 'lifts' (*'lif')* was mentioned most often by the residents, followed by 'parking', 'safety' (*'keselamatan'*), and 'cleanliness' (*'kebersihan'*).

The result was then compared to the top five aspects with the highest percentage of dissatisfied respondents (Table 3.4). For the KL PPRs, it could be observed that issues mentioned in residents' suggestions correspond to their dissatisfaction with specific aspects of the complex. It appears that the quality and number of lifts as well as the number of parking spaces were common concerns in all PPRs. Additionally, Table 3.4 shows the safety of the complex also seems to be a cause of solicitude among residents in the KL-PPRs, but not among residents of PPR Jalan Sungai.

Figure 3.2: Verbatim word count from residents' suggestion



Note: KRI translations in brackets.

Table 3.4: Top five issues by PPR at the complex level

PPR Beringin		PPR Kerinchi		PPR Wahyu		PPR Salak Selatan		PPR Jalan Sungai	
Percentage of dissatisfied respondents									
state of the lift	77%	state of the lift	57%	no. of parking spaces	54%	state of the lift	78%	state of the lift	60%
no. of lifts	63%	no. of parking spaces	54%	level of security	44%	no. of lifts	63%	quality of block staircase	43%
no. of parking spaces	63%	no. of lifts	39%	level of safety	40%	no. of parking spaces	61%	no. of lifts	40%
level of security	60%	level of security	34%	cleanliness of block	30%	level of security	46%	no. of parking spaces	34%
level of safety	53%	level of safety	30%	state of the lift	29%	level of safety	41%	state of railing	32%

3.1.2. Explaining residential satisfaction: What factors are important, and which matter more?

It is critical to discern which factors are important in explaining variation in unit, complex, and overall satisfaction (once individual factors are controlled for). This provides context to the relatively high satisfaction levels reported by residents and acts as a feedback mechanism to see which factors have a higher impact on residents' overall satisfaction.

Overall, previous empirical studies[102] have identified a number of factors that correlate with residential satisfaction. The variables can be broadly grouped into three categories: (i) demographic and socio-economic characteristics, (ii) residential density and (iii) residential environment. A summary of these explanatory factors is laid out in Box 3.2.

[102] See Aigbavboa and Thwala (2018) for an extensive discussion on studies analysing residential satisfaction.

Box 3.2: Residential satisfaction—theoretical background

Numerous studies have been conducted on residential satisfaction, where the concept is used in four ways[103]: (i) as a predictor of individual's perception of general quality of life, (ii) as an indicator of residential mobility, (iii) as an ad hoc evaluative measure of the housing development and (iv) as an assessment of residents' perception of inadequacies in their housing environment to redirect public or private investment efforts. Depending on the purpose of the study, survey design and explanatory factors studied vary significantly. Thus, the studies are not fully comparable. As the focus of this report is social housing within high-density areas in Malaysia, more attention is given to the literature on public, social and low-cost housing as well as high-density residential developments. The relevant variables associated with residential satisfaction are discussed below.

Demographic and socio-economic factors

Residential satisfaction is affected by household composition and how well the current dwelling fulfils occupants' housing needs. For instance, households with children have different preferences compared to households without children, and may place more value on the availability of play spaces that allow easy parental supervision[104]. For large high-rise housing estates, it is hypothesised that single and two-person households without children are more likely to be satisfied with their dwelling compared to those with children[105].

Another notable factor influencing residential satisfaction is the age of the household, although the relationship between age and satisfaction is mixed. This is possibly because age is interrelated with other variables (e.g. family's life-stage, socio-economic status, physical ability and length of stay in a residence). As suggested by Gorczyca and Grabiński (2018), the phenomenon of ageing in place can bring both positive and negative experiences. On one hand, it leads to an attachment to the place and the formation of strong social bonds, which may help improve the lives of older people. On the other hand, ageing in place could be a result of older people being grounded or trapped in their area of residence, and ageing in place in deprived neighbourhoods can lead to social exclusion. This is also the case for groups that are disabled or unemployed which have more restrictions on their activity patterns and have limited housing options[106]. The length of residence is itself postulated to have a positive effect on satisfaction[107]. This is possibly due to individuals having stronger ties to the area after living there longer, thus increasing the probability of residential satisfaction.

The link between residential satisfaction and household income and other socio-economic factors (e.g. education, status of employment) is also unclear. For instance, Lu's study (1999) using the American Housing Survey found that residents with higher income recorded higher satisfaction, which is explained by higher income residents being able to afford better homes and neighbourhoods as well as having the resources to improve and renovate their dwellings. However, higher income households may have higher standards and aspirations, which might leave them more dissatisfied, as discussed by Varady, Walker, and Wang (2001).

[103] Aigbavboa and Thwala (2018)
[104] Dekker et al. (2011)
[105] Dekker et al. (2011)
[106] Dekker et al. (2011)
[107] Gorczyca and Grabiński (2018) and Lu (1999)

In terms of housing tenure, homeowners generally have higher satisfaction levels compared to renters[108]. As summarised by Dekker et al. (2011), this is due to: (i) homeowners having better dwelling options due to their higher income (on average), (ii) owned properties possibly being of higher quality than rented dwellings, (iii) homeowners being more invested to care for and improve the quality of their homes, and (iv) homeowners, already having put money into their homes, perceiving their dwellings more positively (rather than admitting dissatisfaction). However, possible downsides of homeownership include limitations on owners' mobility and in turn employment opportunities as well as the fact that owning a home does not remove other housing burdens such as high costs or poor building quality[109].

Residents' previous housing experiences also have an impact on their residential satisfaction as previous experience serves as a reference point for how residents assess their current housing situation[110]. In Onibokun (1976) study of new residents in public housing, the residents were more likely to overlook any shortcomings of their new homes when they were deemed an improvement compared to their previous residence (e.g. more adequate inside space, better quality accommodation, lower rent). Additionally, the study established that residents had clear preferences on the housing type (i.e. high-rise such as apartments and townhouses versus landed homes such as semi-detached units), and showed that respondents were dissatisfied when they moved from their preferred type in private housing to less preferred types in the public housing projects.

Residential density

According to Churchman (1999) and Neuman (2005), an increase in residential density, or rather perceived density, is often linked with adverse effects on quality of life. Proponents of compact city policies contend that higher residential densities promote better services and facilities, better public transport, and a more vibrant cultural life although these attributes are often absent from profit-maximising, market-led proposals[111].

It is argued that high density land developments may cause considerable hardship to businesses, which seek larger lots to improve productivity, and to households, who want more housing space[112]. Additionally, high density developments may result in unsustainable externalities such as heightened impacts of pollution[113]. A study by Senior, Webster, and Blank (2004) also found that households do not wish to live in high- density residences with less garden and parking spaces, despite being in inner-urban and city centre locations. Similarly, Howley (2009) found tenants living in relatively high-density neighbourhoods within the city central expressed intentions to reside in more desirable rural and suburban neighbourhoods in the short to medium term.

[108] Rohe and Stewart (1996), Overtoom et al. (2019), Diaz-Serrano (2009)
[109] Balestra and Sultan (2013)
[110] Aigbavboa and Thwala (2018), Onibokun (1976)
[111] Howley (2009)
[112] Gomez-Ibanez (1991)
[113] Roo and Miller (2000)

In analysing the impact of density, it is important to recognise the difference between objective density and perceived density. The former is an objective measure of density such as number of inhabitants or housing units within an area while the latter is an individual's perception of density based on signals in the environment that represent people and their activities[114]. This concept of perceived density implies that physical phenomena can be manipulated to increase (or decrease) an individual's perception of the density level in an area[115]. In fact, disapproving views towards density may have resulted from an association with other variables that negatively impact on the quality of life such as noise, pollution, traffic congestion and building type[116]. As noted by Cooper and Sarkissian (1986), "there is no simple relationship between density and satisfaction; other significant variables combining with density affect perceived density and influence satisfaction". Therefore, it may not be high density itself that deters households from living in those areas, but the fact that high density is strongly associated with other negative variables. On a similar note, a study by Kearney (2006) found that residents with dwellings that had more view of nature, and less view of their neighbours' houses were less likely to feel that their unit was too small, lacked privacy or the surrounding homes were situated too close together, regardless of actual lot size and density level.

Residential environment

Literature on residential satisfaction found residential environment to be a key determinant of satisfaction, even more crucial than demographic characteristics of housing residents[117]. The better the quality of the residential environment, the more satisfied the inhabitants are expected to be. The residential environment is usually divided into two groups: the housing unit (the dwelling in which households reside) and the neighbourhood[118].

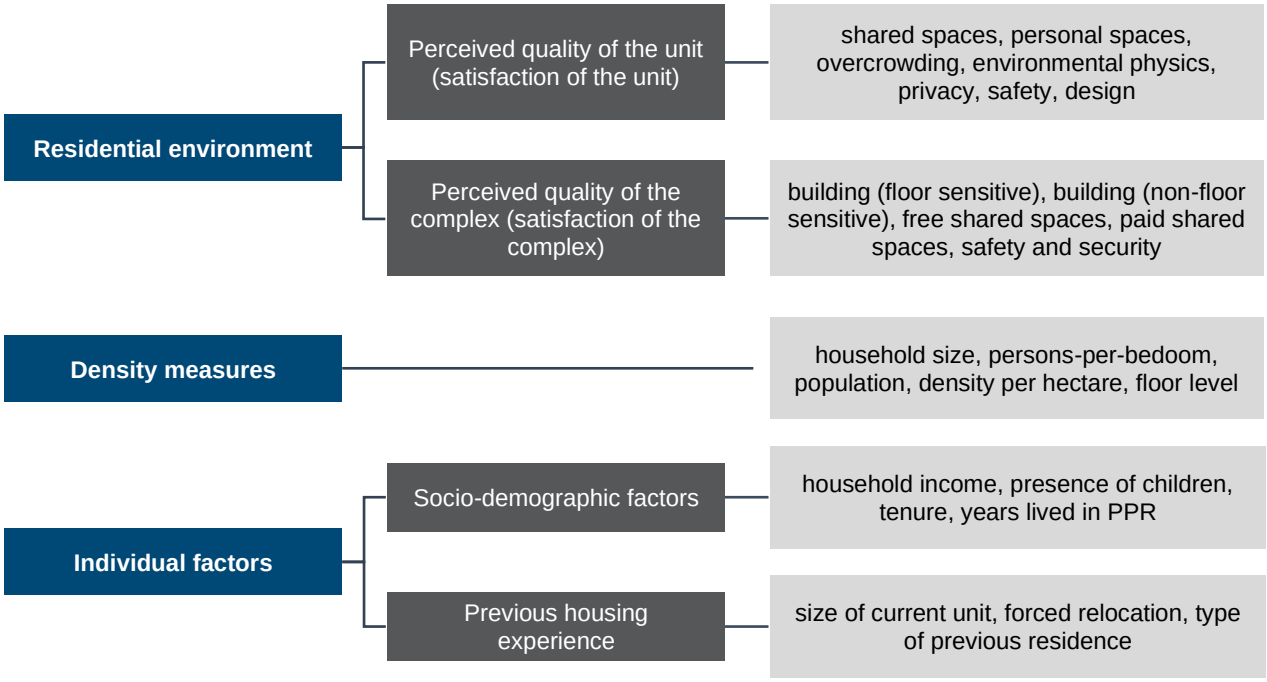
However, housing quality cannot be represented by a single variable as it encompasses a broad range of housing aspects which have both objective and subjective dimensions[119]. Additionally, subjective measures (such as perceptions of or preferences towards the housing characteristics e.g. aesthetics) were found to be stronger predictors of satisfaction than objective measures (such as presence or lack of a housing feature e.g. house contains a garden, or quantities of a feature, e.g. number of bathrooms)[120]. Examples of various housing and neighbourhood characteristics discussed in the literature are as follows[121]:

- Housing characteristics—layout of the house, number and size of rooms by functionality (i.e. bedrooms, kitchen, toilet, play space), privacy, ventilation, floor level, aesthetics and floor space.
- Neighbourhood characteristics—location of the dwelling in the neighbourhood, physical condition and appearance of the neighbourhood, privacy, cleanliness and security.

[114] Churchman (1999)
[115] Jacobs and Appleyard (1987)
[116] Churchman (1999)
[117] Lane and Kinsey (1980)
[118] The concept of neighbourhood is used to take into account the residential environment surrounding the unit. However, there is no exact definition of what a neighbourhood is, whether it is delineated based on physical boundaries or area size.
[119] Overtoom et al. (2019)
[120] Francescato et al. (1989)
[121] Refer to Table 8.1 Conceptual model latent constructs in Aigbavboa and Thwala (2018).

The analysis conducted here is twofold—(1) to investigate the factors affecting unit and complex satisfaction and how the factors differ, and (2) to determine what factors are important in explaining respondents' overall satisfaction. Based on the literature reviewed (covered in Box 3.2), a conceptual model was created which categorises the correlates of residential satisfaction into three broad groups: the residential environment, density measures and individual factors (Figure 3.3).

Figure 3.3: Conceptual model on explaining residential satisfaction



Consequently, six multiple regression models were run to identify the effects of the predictive factors on residential satisfaction. Table 3.5 shows the variables used in the regression analysis.

Table 3.5: Summary of variables in regression analysis

Variables	Range	Summary statistics
Dependent variables		
Satisfaction with the unit	1 – 7 Likert scale	mean : 5.1
Satisfaction with the complex	1 – 7 Likert scale	mean : 4.6
Overall satisfaction	1 – 7 Likert scale	mean : 4.7
Independent variables		
Residential environment		
Unit factors:		
shared spaces	Index	mean : 62.4
personal spaces		mean : 68.5
overcrowding		mean : 68.6
environmental physics		mean : 68.1
privacy		mean : 63.9
safety		mean : 59.9
design		mean : 67.6
Complex factors:		
building—floor sensitive	Index	mean : 54.6
building—non-floor sensitive		mean : 61.9
paid shared spaces		mean : 73.4
free shared spaces		mean : 63.9
safety and security		mean : 53.5
sanitation and cleanliness		mean : 60.4

Density measures		
Household size	Number of persons in household	mean : 4.5
Persons-per-bedroom	1 = has less than two persons per bedroom and the two persons sharing a bedroom must be of the same gender (except for married couples), 0 = has more than two persons per bedroom	1 : 2,614 (78.7%) 0 : 709 (21.3%)
Population density per hectare	Total estimated population living in the complex over the compound area	mean : 0.7
Floor level	0 – 21 number of floors (0 denotes ground floor)	mean : 8.6
Individual factors		
Household income	1 = household income is below median income range RM1.5k, 0 = household income is or above RM1.5k.	1 : 1,300 (39.1%) 0 : 2,023 (60.9%)
Presence of children	1 = has no children, 0 = has at least 1 child	1 : 1,993 (60.0%) 0 : 1,330 (40.0%)
Years in PPR	1 = 8 years or more, 0 = less than 8 years	1 : 2,528 (76.1%) 0 : 795 (23.9%)
Type of tenure	1 = renter, 0 = owner	1 : 2,281 (68.6%) 0 : 1,042 (31.4%)
Presence of disable household member	1 = has no disabled household member, 0 = has at least one disabled member	1 : 2,969 (89.4% 0 : 354 (10.7%)
Size of current unit compared to previous unit	1 = current unit is larger, 0 = current unit is small or is the same size as previous unit	1 : 1,191 (35.8%) 0 : 2,132 (64.2%)
Displacement	1 = Reasons of moving other than forced relocation, 0 = Forced relocation,	1 : 1,010 (30.4%) 0 : 2,313 (69.6%)
Type of previous residence	0 = previous residence is a landed property, 1 = previous residence is a non-landed property	1 : 2,707 (81.5%) 0 : 616 (18.5%)

Six models were created to distinguish the roles of residential environment, density and individual factors in explaining the variance between unit satisfaction, complex satisfaction and overall satisfaction. Table 3.6 shows the regression results for the following models:

- Model (1a) tests the effect of residential environment of the unit on respondents' satisfaction with the unit.
- Model (1b) adds measures of density (i.e. household size, person-per-bedroom measure, population density per hectare and floor level).
- Model (1c) further controls for household socio-demographic factors (i.e. household income, presence of children, years living in the PPR, type of tenure, and presence of disabled household member) and previous housing experience (i.e. size of current unit compared to previous housing, displacement and type of previous residence).
- Models (2a, 2b and 2c) test the effects of the residential environment, measures of density and individual factors on respondents' satisfaction with the complex.
- Finally, Models (3a, 3b and 3c) test the effects of the residential environment, measures of density and individual factors on overall satisfaction.

Table 3.6: Satisfaction with unit (Model 1a, 1b, 1c), satisfaction with complex (Model 2a, 2b, 2c) and overall satisfaction (Model 3a, 3b, 3c)

	Model 1a	Model 1b	Model 1c	Model 2a	Model 2b	Model 2c	Model 3a	Model 3b	Model 3c
Dependent variables	**Satisfaction with unit**			**Satisfaction with complex**			**Overall satisfaction**		
Independent variables									
Residential environment									
Shared spaces	+***	+***	+***				+***	+***	+***
Personal spaces	+	+	+				-*	-*	-
Overcrowding	+**	+**	+*				+	+	-
Environmental physics	+***	+***	+***				+*	+**	+*
Privacy	+	+	+				+	+	+
Safety	+**	+**	+**				+***	+***	+***
Design	+***	+***	+***				+*	+*	+*
Building—Floor sensitive				+***	+***	+***	-	-	+
Building—Non-floor sensitive				+*	+*	+*	+	+	+
Paid shared spaces				+***	+***	+***	+***	+***	+***
Free shared spaces				+***	+***	+***	+	+	+
Safety and security				+***	+***	+***	+***	+***	+***
Sanitation and cleanliness				+***	+***	+***	+***	+***	+***
Measures of density									
Household size		-	-		-	-		-*	-*
1.person-per-bedroom		-	-		-*	-*		-*	-*
Population density per hectare		-	-		-*	-*		-	-
Floor level		+	-		+	+		-	-
Individual factors									
1.household income ≤ RM1.5k			-			+			-
1.no presence of children = 1			-			-			+
1.living in PPR for 8 years or more = 1			+			-			+
1.renter-occupied = 1			+			+			+
1.no presence of disabled household member = 1			+			+			+*
1.size of current unit is bigger = 1			+***			+			+*
1.moved not due to forced relocation = 1			+			+			+
1.prior housing is landed = 1			-			-			-
Constant	+***	+***	+***	+***	+***	+***	+***	+***	+***
R-sq	0.309	0.310	0.316	0.338	0.340	0.342	0.383	0.385	0.388

Note: All models were run with 3,323 respondents; all respondents who have non-missing scores on all variables used. See Appendix E for the full table with coefficients.
*p , 0.05; **p , 0.01; ***p , 0.001

Satisfaction with the unit

Model 1a tests the effect of the residential environment on residents' satisfaction with the unit. Of the seven attributes of unit residential environment, five were found to be significant and positively related to satisfaction. Perceived quality of shared spaces was also significant, while perceived quality of personal spaces was not. This suggests that residents placed more importance on shared spaces within the unit (i.e. size of living room, dining room, kitchen and yard) compared to personal spaces (size and number of toilets/bathrooms). The overcrowding aspect (which is measured by respondents' satisfaction with the size and number of the bedrooms)[122] was also found to be significant. Finally, it appears that residents also valued the design and safety of the unit.

Model 1b added measures of density to residential environment variables. However, the regression results show that none of the density measures were significant. Finally, controls for individual factors were added in Model 1c which demonstrates that previous housing experience matters, particularly the size of the current unit compared with the respondents' previous home. Respondents were more likely to be satisfied when they perceived their PPR units as being larger than their previous home.

Satisfaction with the complex

The next three models test the effects of the residential environment, measures of density and individual factors on respondents' satisfaction with the complex. Model 2a demonstrates that all residential environment factors of the complex were significant and positively related to complex satisfaction. After adding density measures to Model 2b, the person-per-bedroom measure and population density per hectare were found to be significantly related to complex satisfaction, while household size and floor level were not. A negative relationship between population density and satisfaction shows respondents living in PPRs with a larger population density were more likely to be dissatisfied. However, the negative relationship between the person-per-bedroom measure and satisfaction with the complex is contrary to expectation (that households living in 'overcrowded' conditions are more likely to be less satisfied). One possible explanation for this unexpected finding is that the measure itself may not accurately reflect 'overcrowding' in a Malaysian context[123]. None of the control factors added to Model 2c were significant in explaining satisfaction.

Overall satisfaction

The last set of models tests the effects of the residential environment, measures of density and individual factors on overall satisfaction with the PPR. Model 3a shows that the residential environment of both unit and complex matter in explaining overall satisfaction. In terms of residential environment variables relating to the unit, five out of seven variables were found to be significant, namely shared spaces, personal spaces, environmental physics, safety and design. For residential environment variables pertaining to the complex, the variables found to be significant were paid shared spaces, safety and security, and sanitation and cleanliness.

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[122] The regression analysis differentiates between perceived and objective measures of overcrowding. The 'overcrowding' variable measured as part of the residential environment variables reflects perceived measures of overcrowding while the measures of density reflect objective measures of overcrowding.

[123] How a household assess their living conditions also depends on the cultural context, i.e. what age should siblings of the opposite gender stop sharing a room? For comparison, the room standard in the UK includes age of household members when estimating overcrowding. Source: ODPM (2004)

Interestingly, overcrowding is insignificant in explaining overall satisfaction, despite being significant for unit satisfaction. Both floor-sensitive and non-floor sensitive building aspects, as well as free shared spaces were also unimportant, even though they were significantly related to complex satisfaction. Perceived safety and security of both unit and complex also had a major effect on residents' overall satisfaction.

Model 3b adds measures of density to the explanatory factors and indicates that household size is significantly negatively related to satisfaction. This suggests that larger households are more likely to be dissatisfied compared to smaller households. Finally, Model 3c—controlling for individual factors—demonstrates how previous housing experience and household demographic affect overall satisfaction. In terms of housing experience, the current unit being larger than the previous has a positive impact on the levels of gratification. Additionally, households with no disabled members appear to exhibit a greater level of satisfaction. This suggests that the overall design of the PPR are better suited for those without disability and may not adequately meet the needs of disabled residents.

Key findings from the regression analysis

- Residents' perception of various residential environments far outweighed objective measures of density and individual factors in explaining the reasons behind the perceived satisfaction. Adding objective density measures and individual factors to the models led to only a relatively small increase in the model's explanatory power (marginal increase in R-squared values).
- More precisely, the residential environment of the unit (i.e. environmental physics, shared spaces and safety aspects) as well as the complex (i.e. building features that are floor-sensitive and non-floor-sensitive; free and paid shared spaces; safety and security) have a strong influence on residents' satisfaction.
- This is consistent with other research findings on residential satisfaction in the literature, which suggests residential environment is even more important than the demographic characteristics of housing residents[124].
- Interestingly, objective density measures, particularly household size, were significant in explaining overall satisfaction, but not satisfaction with the unit or complex. Nonetheless, as noted earlier, these measures add little explanatory power to the models predicting overall satisfaction. These findings suggest that it is not high density itself that influences residential satisfaction, but rather other factors such as environmental physics, shared spaces and safety issues. As asserted by Churchman[125], it might not be density per se that discourages consumers from certain locations, but the fact that high-density areas are strongly associated with other negative variables.
- In terms of housing experience, the current PPR unit being bigger than the previous home appears to significantly increases satisfaction.
- Finally, households with no disabled members have significantly higher satisfaction.

[124] Lane and Kinsey (1980)
[125] Churchman (1999)

3.2 Residents' Associations—Social Ties and Organisations

The previous section discussed residents' satisfaction with their PPR units, highlighting common concerns regarding cleanliness, safety and security. But how exactly are these issues captured and addressed?

One of the ways residents can give feedback or introduce changes is by coming together as a community. Having community groups (formal or informal groups created by the community) are beneficial for strategizing improvement efforts, channeling complaints and planning communal activities. This section discusses the role of community groups while focusing on Residents' Associations (*Persatuan Penduduk*) within the PPRs.

3.2.1. Residents' Association in PPRs

In Malaysia, high-rise residential and strata private housing schemes are managed by a management body formed by parcel owners. The management body is regulated by the Strata Management Act (2013)/ACT 757 and supervised by the Commissioner of Buildings at the local authority level. One of its main functions is to sustain legitimate care of the common properties and buildings. Contrary to private strata housing, PPRs originated as a social renting scheme which later allowed for ownership. Initially, they did not have management bodies. Once ownership schemes were introduced, unit owners eventually formed a joint management body, allowing them to have more say in terms of building management (e.g. conducting repairs on existing amenities, appointing maintenance contractors). Renters, on the other hand, are not directly involved in the management of the complex.

However, management bodies of PPRs often have limited funding due to insufficient collection of maintenance fees which in turn affects their ability to manage the complex. Furthermore, unlike private strata housing, the constitutionality of management bodies in PPRs is unclear. According to DBKL, a management body can only be formed by unit owners once the ownership rate has reached 100% and owners take full responsibility of the overall complex management[126].

Considering that a large percentage of PPR residents are renters (see section 2.4.1 in Chapter 2), how do the communities in the PPRs address issues arising and play a role in the management of the complex (since technically they are not part of the management body)? The means by which they attempt to overcome this problem is by forming a Residents' Association *(Persatuan Penduduk).*

[126] This was based on an engagement session with DBKL's small office (*pejabat kecil*) in 2018.

3.2.2. Community engagement sessions

All of the PPRs in the study was found to have formed their own Residents' Association, along with other associations, such as *Rukun Tetangga* and Joint Management Body (with DBKL). The team conducted community engagements with these Residents' Associations to explore their roles and gain insights to supplement the satisfaction survey. The objective of the engagement sessions was to gain a better understanding of the community organizations at the PPRs in terms of their roles and responsibilities, organizational structure, residents' concerns as well as the association's influence and involvement in managing the living environment at the PPRs. Representatives of Residents' Associations in four of the five PPRs were interviewed- PPR Jalan Sungai (Penang), PPR Kerinchi (KL), PPR Taman Wahyu (KL) and PPR Salak Selatan (KL).

The engagement sessions with the Residents' Associations focused on two main topics of discussion[127]:

1. The structure, roles and responsibilities, and main concerns (i.e. composition and selection of committee members, funding structure and common issues faced) of the Residents' Association.
2. The operations and maintenance of the whole PPR complex.

Table 3.7 summarizes the features and roles of the Residents' Association, the *Rukun Tetangga* and the Joint Management Body.

Table 3.7: Community organisations in PPRs

Community Organization	Description
Residents' Association	• Involved in communal and social activities in the PPR e.g. festive celebrations • Intermediary between the residents and local authorities and external parties • Registered with the Registrar of Societies (ROS) and receives an annual budget from ROS of around RM10,000 a year. It also receives funds via charity and Corporate Social Responsibility (CSR) programs • Open to all residents
Rukun Tetangga	• Manages safety in community neighborhoods, similar to a neighborhood watch (*Rondaan*) • Registered with the Department of National Unity and Integration • Open to all residents
Joint Management Body	• Responsible for maintenance of the complex • Open only to owners of PPR units

Note: In PPR Jalan Sungai, only the Residents' Association was formed.

The engagement sessions covered a wide range of issues raised by residents, such as the quality of existing amenities (e.g. cracks on walls and corridors) and the lack of facilities (e.g. walkaways for disabled persons, schools, parking spaces), concerns on safety and security (e.g. the need to hire more security guards), and sanitation and cleanliness (e.g. the lack of rubbish bins and overall upkeep).

[127] See Appendix C for the list of questions covered during the engagement sessions.

The Residents' Association serves as an intermediary between the residents and external parties (i.e. local authorities). For instance, residents' feedback will be conveyed to the local council through various means[128], but problems may not necessarily be addressed.

Therefore, active participation by residents is vital to improve the living conditions in the PPRs and solve community issues. In fact, the engagement sessions revealed a number of community initiatives undertaken by the Residents' Associations as shown in Table 3.8.

Table 3.8: Summary of community initiatives by Residents' Associations

PPR	Initiatives
PPR Jalan Sungai	• Water pump for up to 2,000 people was replaced by a pump for 200,000 people • Abandoned vehicles were removed at the discretion of the Chairman • CCTVs were installed in the lift to deter vandalism • CCTVs were placed around the PPR for safety and there was a plan to employ residents as security guards • A new playground was built-based on a voting system that included all residents to vote on the type of amenities needed for the complex
PPR Kerinchi	• *Gotong-royong* were conducted using funds collected from residents • Collaborations were developed between Residents' Association with *Rukun Tetangga*, *Agensi Anti Dadah Kebangsaan* and Brickfields Police Station to monitor drug activities in the PPR • Sports activities were organised
PPR Salak Selatan	• Annual gatherings were held to celebrate Hari Raya, Chinese New Year and Deepavali • *Gotong-royong* activities were conducted, though not with a fixed frequency
PPR Taman Wahyu	• Awareness campaigns were undertaken with various government agencies • Landscaping of the PPR entrance was funded by a private developer • New community halls, *tahfiz* schools and kindergarten were built • Sport activities were organised • *Gotong-royong* activities were conducted

Another important finding about the Residents' Associations relates to their committees. Participation in the Residents' Association committee is voluntary, and members are not paid for their service. Furthermore, some members also work full-time. Therefore, it appears that there is a degree of hesitancy among residents to serve on the committee especially in larger PPRs. In some large PPRs, sub-associations are formed for each housing block. Nonetheless, some Residents' Association committees have had the same chairperson and members for extended periods of time since they were first formed. Table 3.9 summarizes the Residents' Association committees of PPRs in this study.

[128] For example, residents of PPRs that are under the purview of DBKL can raise issues by contacting officers from *Bilik Gerakan* (a unit under DBKL) or by reaching out directly to the *Pegawai Pelawat* (the officer in charge of that particular PPR). Residents can also write letters to their local councils or raise issues during engagement sessions held by the local councils.

What are the factors that empower the Residents' Associations to fulfil their roles and responsibilities? From the engagement sessions, a number of 'best practices' or preferred practices of the Residents' Associations were uncovered, such as:

- having different segments of the community represented within the Residents' Association (e.g. youngsters, women, old folks, renters and owners);
- conducting activities regularly to gain trust from local authorities; and
- developing and maintaining a good working relationship with local authorities.

PPR Wahyu and PPR Jalan Sungai emerged as exemplary cases where Residents' Associations played a vital role in strengthening communal ties, addressing issues and implementing improvements in their PPRs, as described in Box 3.3.

Table 3.9: Observations of PPR residents' associations committee members

PPR	Observations of membership and committee structures
PPR Jalan Sungai	• 8 committee members, with sub-committees • Committee members are of various age groups and educational background • Annual General Meeting (AGM) are held annually and committee selection every two years • Chairperson is a MBPP councillor
PPR Kerinchi	• No specific number of committee members due to membership being on a voluntary basis • AGMs were not conducted; received warning from ROS • Committees meet when needed, mainly to organise events and programs • No specific sub-committees • Turnover has been very low—same members since its formation • Young adults were not eager to be in the committee but were more likely to participate in activities like football competitions
PPR Salak Selatan	• 23 members with eight main committee members • Almost no participation from youngsters as they are not entitled to any benefits. Only a group of same old people "*orang tua, muka sama*" show up • No specific criteria for membership as membership is voluntary • Chairperson should be clear of financial blacklist and criminal records • AGM is held every two years, but participation has been very low (last meeting in 2019: 117 out of 632) • Sub-committee for specific activities can be established temporarily • Turnover is very low as the same members remain in the committee. Chairperson has been in the position for more than 14 years
PPR Taman Wahyu	• 22 registered members but more than 50 unregistered members assist in operations • At least 4 bureaus (*keceriaan*, youth, women and seniors) and each bureau conducted at least one activity a year • No specific criteria to be a member but must not have a criminal record • AGM are held annually and committee selection every two years • Strong youth participation • Turnover is generally low—same members except if the person passes away or moves out

Note: These observations are based on the community engagement sessions that the research team had with the residents' associations in 2019.

Box 3.3: 'Best practices' of community associations (PPR Wahyu and Jalan Sungai)

Communal activities instil values and create a sense of belonging among PPR residents. A community association such as the Residents' Association or *Persatuan Penduduk* gives residents a voice and enables them to address issues arising within the community. Local leadership who understands the community better than outsiders are able to judiciously deploy official resources for initiatives that improve neighbourhood living[129].

The practices adopted for community associations were identified during engagement sessions with Residents' Associations in PPR Jalan Sungai and PPR Taman Wahyu. These practices are discussed further here.

Active participation is the key to the effectiveness of the association. Committees whose members represent various age groups, educational and working backgrounds are more active and run more communal programs. Meanwhile, associations with fewer young people in their committees were observed to be less active in running community programs. Both Residents' Associations in PPR Taman Wahyu and Sungai Pinang demonstrated the effectiveness of having committee members of different genders, ages, and career backgrounds in organising communal programs. For example, the committee at PPR Taman Wahyu was able to organize a neighbourhood-level soccer competition that involved residents outside the PPR. Youths were encouraged to participate in the Resident's Association at PPR Jalan Sungai. They were given important positions to ensure there is succession planning in the committee.

An active and engaged community builds trust with local authorities, which promotes better funding for communal activities and neighbourhood initiatives. The Residents' Association in PPR Jalan Sungai managed to secure a grant directly from an NGO because it was able to communicate effectively and demonstrate that it was actively serving the local community. The PPR residents administered the project whose benefits extended to the wider community. Instead of the NGO outsourcing external catering services for its program at the PPR, PPR residents took the initiative to prepare food and beverages themselves. This provided them an extra source of income and allowed program funds to go further. On the whole, PPR community associations preferred to receive direct funding for community programmes that they could administer themselves.

A good relationship with local authorities is important to ensure that community concerns are being channelled to decision-makers. Community leaders who are able to develop and maintain such relationships were critical to this process. The Chairman of the PPR Jalan Sungai Residents' Association; for example, was a MBPP councillor who understood the bureaucracy and was able to maintain a good relationship between the PPR community and state or local authorities. Also, the chairman of the PPR Taman Wahyu Residents' Association was a government official who could communicate effectively with local authorities.

[129] Hall et al. (n.d.)

The buy-in from local governments for bigger initiatives started by convincing efforts by the community to encourage positive living environment. PPR Taman Wahyu is also known as *PPR Anak Angkat* for DBKL that sets the best example of social housing under DBKL. DBKL has recognized the community efforts and has been continuously supportive to their programs. From being active in organizing small scale community activities, the PPR Taman Wahyu Residents Association managed to get DBKL supports for bigger initiatives such as new facilities. Since 2017 to 2019, many facilities have been opened surrounding the PPR such as a *tahfiz* school, a new community hall and a new preschool. The new *tahfiz* school is an example of a community-led initiative. PPR residents identified a suitable site, prepared the development proposals and worked with DBKL to appoint a qualified person to manage the school. Admission to the school is also open to non-PPR residents.

3.3 The Role of the Local Council

The local council plays a crucial role in physical planning, which includes ensuring a sufficient supply of housing, providing social housing and managing public amenities and infrastructure. Once development has been approved, local authorities must ensure that housing supply caters to the needs and demands of households of their local populace. In this section, the responsibilities of the local council in terms of managing the PPRs are discussed in detail, particularly (1) their role in creating a positive living environment within the complex and (2) facility maintenance of the social housing stock.

3.3.1. Creating a positive living environment in social housing complexes

At the KL PPRs, DBKL's small office (*pejabat kecil*) is located within the complex to serve as an information centre for residents and to ensure effective communication between the local authority and the PPR community. A DBKL officer (*pegawai pelawat*) is assigned to every PPR to address residents' queries and concerns regarding living in the PPR. In general, DBKL officers stationed in PPRs has close interactions with the Residents' Associations. This working relationship is critical to ensure DBKL maintains a hands-on perspective on the living environment in the PPR, and to afford residents opportunities to initiate community and improvement programs with the local authorities. General community programs such as religious and social activities, awareness campaigns, sports competitions and skills workshops for households are organized in PPR. While the primary objective of these programs is not income generation, PPR households may indirectly increase their incomes, for example through learning new job skills.

Nonetheless, engagement sessions also revealed these initiatives at the PPR did not necessarily receive universal support, especially if they were not community-led. For example, residents were displeased when the local government sponsored a cultural concert at the PPR while neglecting the maintenance of facilities, like lifts. Residents saw this as a disregard of their 'real' needs. However, from the local government's perspective, its bureaucratic and administrative structure (i.e. the division in charge of community programs maybe entirely separate from maintenance) can hinder attempts to address these problems efficaciously.

Therefore, government agencies or non-government agencies (e.g. civil society organisations) intending to organise PPR community programs should first engage with the PPR community and local authorities. This will help ensure that programs are relevant, encourage active participation from residents and enable sufficient planning of program budget and logistics.

From satisfaction surveys to immediate measures

There are many aspects of PPRs that local councils can focus on to improve residents' living conditions. Based on the satisfaction index scores and regression analysis discussed earlier, local councils can pinpoint which aspects of the unit and complex to prioritize for improvement.

Based on this premise, aspects of the housing unit that should be looked into are:

- inadequate size of shared spaces (i.e. living room, dining room, kitchen and yard); and
- concerns about safety within/surrounding the unit.

Aspects of the complex that should be addressed are:

- level of safety and security in PPRs;
- state of sanitation and hygiene which includes overall cleanliness of building blocks, size of refuse chambers, and state of drains around the complex;
- aspects that are floor-sensitive which includes the number and condition of lifts, location of refuse chambers, and quality of stairs in the complex;
- aspects that are non-floor sensitive which includes quality of corridors in the complex and state of the safety railings;
- free shared spaces which include state of community hall, state and size of *surau*, state of playground, and the number of parking spaces.

Additionally, the local council should ensure that PPRs are both functional and accessible. The regression analysis indicates that PPRs do not cater to those with disabilities, as households with disabled members are more likely to be dissatisfied overall.

3.3.2. Maintaining the PPRs

PPR maintenance works and rental payments are managed by local authorities or state housing agencies. This includes PPRs with ownership schemes (*PPR Dimiliki*) even though fully owned PPRs could form their own management bodies. However, there are no clear legal frameworks or written laws regulating PPR maintenance. Therefore, it is uncertain from a legislative standpoint who should be financing maintenance in PPRs[130] with the introduction of ownership schemes.

Theoretically, an effective housing policy that recognises a social housing sector funded by the government to serve the needs of those who cannot afford housing in the private market[131] will also make provisions for continuous financial assistance from the government to maintain the social housing stocks and prevent them from becoming slums.

[130] Mahyuddin Daud et al. (2018)
[131] Suraya Ismail et al. (2019)

Current practice based on the case studies

A study published by JPN found regularly scheduled maintenance was absent from all PPRs. The study reported that the quality of PPRs were graded as moderate and in good condition[132]. The study also suggested that maintenance practices could be improved by having a maintenance schedule[133] .

Engagement sessions with the Residents' Associations corroborated these findings. It was found that most maintenance work in PPRs is carried out on an ad-hoc basis or as reported case-by-case. This means regularly scheduled maintenance on facilities is not practiced in most PPRs. Only one PPR reported having scheduled maintenance of some kind and only for lifts. Otherwise, repair works were carried out only after residents reported a malfunction. Residents also said that there was no professional building inspection or monitoring of the PPRs' physical condition.

As mentioned in Chapter 2, all PPRs have three lifts servicing each block. The KL PPRs have 18 floors while PPR Jalan Sungai has 22 floors. Should a lift break down, the limited number of functional lifts in a high-rise residential complex would severely impact residents' daily routines and pose considerable challenges in emergency cases. Furthermore, stairs have limited utility for the old and disabled seniors in a high-rise complex. Although the number of lifts and their technical specifications were thought to be adequate when the PPRs were first built, these facilities suffer from deterioration over time and have a limited life span. A lack of inspection and maintenance compounds the problems further. News reports of lift problems are common public knowledge. In August 2019, eight people were reported injured when a lift at PPR Kerinchi fell due to brake failure[134].

Maintenance costs of the PPRs in this study are managed by their respective local councils—DBKL and MBPP. Funding sources include rental collection, maintenance fees paid by PPR unit owners to the local authorities or the local authorities' own revenue (such as fees and taxes). The federal government may also allocate some funds for PPR maintenance and repair works in the form of grants, for example, *Program Penyenggaraan Perumahan*[135].

As the usage of smartphones become common among Malaysians, the way residents report malfunctioning facilities has changed. When there is a malfunction, residents can lodge a report by sending messages using WhatsApp on their smartphones or by formally lodging a report at a call center[136]. Residents believe that using Whatsapp makes communication among themselves and with the relevant personnel from local authorities more efficient.

However, it was found that receiving prompt replies from relevant parties such as from the local authorities or maintenance contractors did not translate into prompt works and repairs being undertaken. Residents of one the KL PPRs informed that this is due to the reason that their lift maintenance contractor was located too far away from the PPR, which would result in a delay to repair works being done. The residents were much less concerned about process and procedures as long as the relevant parties were informed of the issues (e.g. defects and malfunctions) and prompt action was undertaken.

[132] According to the study, the inspection of quality was done virtually.
[133] JPN (n.d.)
[134] Haika Khazi and Mohd Faris Fuad (2019)
[135] KPKT (n.d.)
[136] Also known as *Pejabat Kecil.*

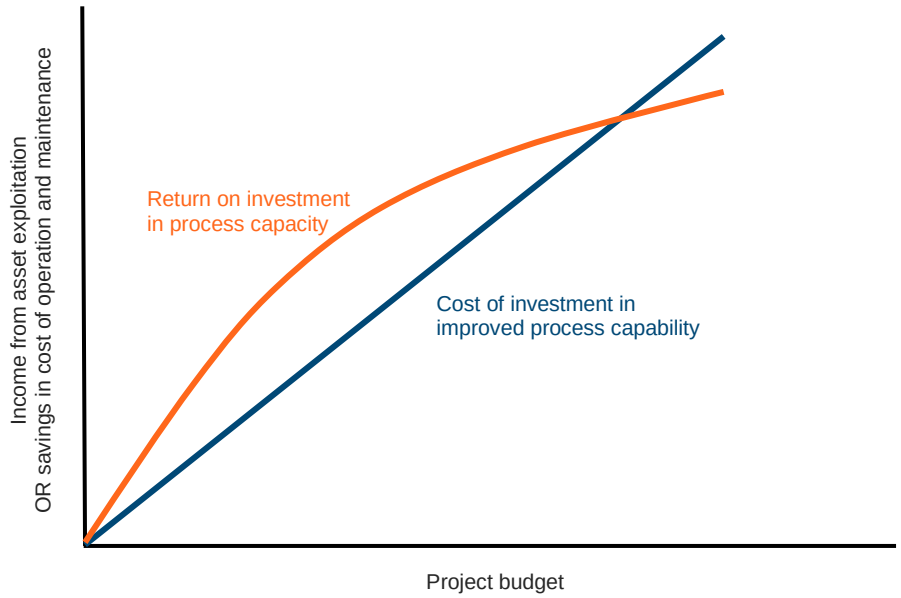
There is no doubt that proper maintenance practices are needed for all buildings especially high-rise social housing. The costs of proper maintenance for good quality social housing could go into social housing rent determination.

A financing model based on life-cycle costing

Maintenance work can be costly and rental arrears can occur in the social housing sector[137], posing financial challenges to the local authority. A high-rise PPR complex requires good maintenance practices, including scheduled maintenance works on the buildings and facilities. Strategic building and construction planning is required to ensure adequate funding for proper long-term maintenance. One way to achieve this is by implementing life-cycle costing (LCC) in construction, including the development and refurbishment of PPRs. However, LCC is not part of the existing PPR process.

LCC calculates estimated costs needed for a building throughout its life cycle—from construction to demolition. Construction project owners (whether government or private sector) often make decisions solely based on acquisition costs (normally preferring the lowest cost). Costs of future operations and maintenance are often neglected in this decision-making process[138]. For example, improved construction process capabilities such as adopting advanced building construction technique and materials can be seem as investment for a greater saving in the life cycle cost of a building. Nevertheless, savings can also be diminished if additional improvements become unnecessary and creates more wastes[139]. Examples are unnecessary building specifications and designs that can be too elaborate for social housing. This type of trade-off is illustrated in Figure 3.4.

Figure 3.4: The trade-off of technological adoption in building construction (an example of improving construction process capability) to savings in costs



Source: Winch (2002)

[137] Fitri Nizam (2019)
[138] Heralova (2019)
[139] Winch (2002)

An LCC approach provides building owners with relevant information needed to estimate the costs of not just initial capital expenditure but future building upkeep as well. For this reason, LCC could serve as a key decision-making tool in social housing management, especially if the objective of social housing is to provide decent housing for the poor with efficient operational and maintenance costs. State and local governments will be able to allocate (or at least estimate) funds needed to manage social housing complexes. It could also be one of the factors in social housing rent determination.

On the other hand, social housing occupants should be made aware of LCC in case they are planning to buy a unit. This is to ensure that they are informed regarding the costs of maintenance that come with property ownership. Furthermore, being informed about LCC enables owners to identify necessary maintenance and repairs which in turn preserves property value and promotes equity growth.

Box 3.4: Ensuring the social housing stock is well maintained

The problem—shoddy workmanship & the lack of scheduled maintenance

The satisfaction survey revealed residents were least satisfied with the overall safety, security sanitation and cleanliness of the buildings. Similar findings were reported by a study conducted by JPN[140], which identified problems amongst others; 'concrete spalling', cracks on pathways, formation of stalactites and stalagmites, cracks, soil deposition, collection of stagnant water, growing moss from water leakage, paint peeling off and all sorts of problems, which was traced to shoddy work and a lack of scheduled maintenance. Some of these problems are due to substandard workmanship of buildings rather than the lack of maintenance.

Maintenance and rectification work are generally funded by rents collected. Unfortunately, the caretakers of social housing, in this case the local councils, have experienced a significant amount of rental arrears. This is despite social rentals of RM124 per month and have not been increased by the government since 1998. It has been reported that the accrued rentals from both the PPR and PPA nationwide have amounted to RM58 million[141]. For example, DBKL reported rental arrears of RM18 million involving 26,860 PPR and PPA tenants[142].

The question remains, are social rents sufficient to maintain the buildings in good workable order?

Financing social housing with equitable living standards

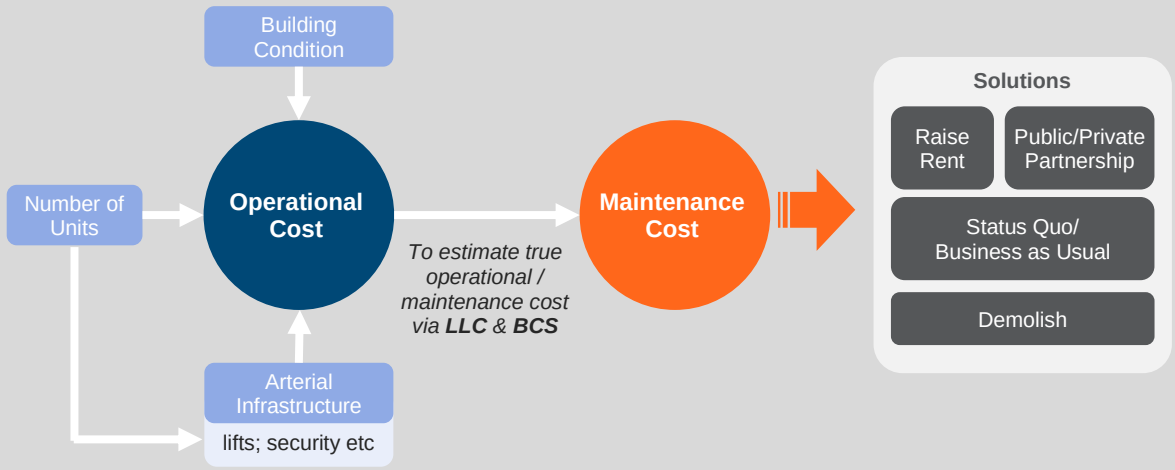
In the private market, maintenance fees for a given apartment complex are computed by dividing the aggregated Gross Operational Expenditure (GOE) by the total number of units. The GOE charges are also a reflection of the number and type of amenities and services available within the complex.

[140] JPN (n.d.)
[141] Fitri Nizam (2019)
[142] Berita Harian (2019)

It has been estimated that the monthly maintenance cost of a PPR unit is at RM210[143]. Therefore, there is a clear gap between this estimation and the current monthly rentals of RM124. Moreover, the lack of transparency with which maintenance fees are determined prevents both the residents/JMB and the local council from effectively managing the upkeep and sustainability of the buildings.

While it has been estimated that the monthly maintenance cost of a PPR unit is RM210, what are the factors that might lead to higher costs as compared to other high-rise complexes? And how should maintenance charges be determined? What proportion of this amount ought to be borne by residents of social housing?

Figure 3.5: Determining maintenance fees based on the Life Cycle Costing (LCC)



As described in this chapter, the Building Condition Survey (BCS) can be utilized with LCC to estimate the true costs of maintenance over the life of buildings. However, the unraveling of these factors might indicate large shortfalls in the existing financing strategy.

The most direct approach to overcome the potential shortfall is to increase the monthly rentals in order to cover the costs of maintenance. However, raising rentals may be difficult to enforce since it deviates from policies of providing shelter for the poor. One of the reasons why PPRs were built was to curb the formation of urban slums as well as to provide shelter as a rights-based approach to mitigate poverty. Furthermore, assuming social housing complexes were built with low priority for reducing maintenance costs, it would be an injustice for social residents to be burdened with the high costs of maintaining dysfunctional buildings. Nevertheless, by accepting the current status quo, both the residents and local councils face the risk of further building deterioration. Increasing the rental rates may prove to be a difficult decision and requires in-depth analysis of both the residual incomes of social housing tenants as well as the functional capabilities of the respective building complexes.

[143] Syafiee Shuid (2016)

An alternative approach is to fund social housing maintenance through a public-private partnership approach. In addition to seeking an increase in the budget allocation from the state government, resources to fund PPR maintenance can be pooled from the private sector and NGOs. For example, as part of their CSR activity, private institutions may adopt a PPR project and pledge certain amounts of monies to cover specific aspects of the PPR complex such as lift maintenance, security, or cleanliness. This is similar to DBKL's *PPR Anak Angkat* project whereby the City Hall adopts a PPR project, working with active residents' association to bring in new facilities. This model can be replicated under the public-private partnership, creating opportunities for numerous PPRs to improve their maintenance and facilities.

Finally, the option to demolish buildings once maintenance costs surpass a significantly high threshold remains plausible. In the event that both the LCC and BCS exercises reveal that maintenance and refurbishment costs will be exorbitant, then this burden of financing the complex in the long run will be a substantial drain of resources for local councils. Therefore, local councils ought to consider the option of demolition, because prolonged maintenance of a building in decay is not financially feasible.

It is important to note that the neglect to address the lack of maintenance will not only result in building deterioration but also eventually transform PPR complexes into urban slums. This defeats the objective of PPR programmes of achieving Zero Squatters goal, where squatter settlements were perceived as urban slums. As highlighted earlier in the chapter, PPR residents prefer local councils to address their immediate needs such as maintenance of facilities rather than cultural activities, for example the sponsored cultural concert. In addition, residents gave feedback that the available resources can be better utilized to serve their utmost priority—scheduled maintenance, maintaining facilities in good conditions—which will improve their living conditions. Maintenance is crucial given the nature of high-density PPR complexes; the persistent lack of maintenance and sanitation will only result in urban slums as well as inviting unwarranted public health issues.

3.4 Conclusion and Policy Implications

Local governments are constrained by limited public funds and other factors such as state and federal government policies, strong private sector influence and community group interests[144]. Therefore, there is a need to prioritize immediate actions that local governments can take to improve social housing conditions. The fundamental principle of any policy action in Malaysian social housing and low-income neighbourhoods should be to upkeep the living environment and prevent these neighbourhoods degrading into slums. This subsection discusses some policy implications based on the findings from Section 3.

One of the ways to create a sense of belonging among PPR residents is to empower their Residents' Associations and their committee members. As observed in the case studies, an active committee builds trust and goodwill with the local authorities. When committees exhibit the ability to manage their own funds and activities, this may encourage local authorities to expand their roles and responsibilities beyond the present scope. Therefore, NGOs and external parties working with PPR communities can play a role in building that trust and goodwill with local governments.

Like other high-rise buildings, PPRs need regularly scheduled maintenance for their facilities, especially lifts. Lifts breaking down is one of the biggest concerns for PPR residents as it impacts their daily commutes and may cause accidents. The use of BCS as a monitoring tool can ensure PPRs are in safe and good condition. They can also determine where major repairs and refurbishments are needed or if buildings are no longer fit for purpose and need to be rebuilt. Designing new PPRs and improving existing ones using a LCC approach can help the government allocate funds efficiently for PPR management and maintenance.

[144] Grodach and Ehrenfeucht (2016)

CHAPTER 04

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CHAPTER 4

SPATIAL ANALYSIS: ENSURING A SUPPORTIVE ECOSYSTEM FOR HOUSEHOLDS

Houses do not just serve as shelter for households but also as an enabler for them to participate in economic and social activities[145]. The objective of social housing would be encumbered if homes are not situated within reasonable distances to places of employment and key amenities. As asserted earlier in the report, social housing policies tend to ignore these wider aspects to the detriment of the quality of life for inhabitants. As such, an additional objective of this report is to examine the locational condition of the PPR residents.

Unlike the perceived socio-economic benefits arising from rural-urban migration where households can participate in the urban economy, the relocation of existing urban commune in informal settlement's benefits might not be as straightforward. Less than 10% of PPR residents surveyed were inward migrants from rural areas. With the exception of PPR Jalan Sungai, more than half of the residents in the Kuala Lumpur PPRs were forced to relocate, with PPR Kerinchi and PPR Salak Selatan recording the highest at approximately 82.4% and 78.7%, respectively. Several studies have highlighted the negative effects of forced relocation: for example, weaker employment relations or opportunities, disruption to schooling as well as a general increase in the cost of living.

Locational characteristics are an important component of housing satisfaction and may serve as an indicator to deduce the impact of forced relocation. Under the priori that the relocation weakened residents' locational position, the first question explored in Section 4.1 is the travelling distances for residents' daily needs and activities. Section 4.2 consequently examines the relocation process to provide an understanding of whether it was disruptive or has offered better opportunities to households. Section 4.3 establishes the degree of satisfaction among PPR residents with their present location and examine whether it is contingent on the distances traversed or past experiences. Finally, Section 4.4 concludes the chapter with a summary of the findings and the policy implications.

4.1 Places Frequented by Households

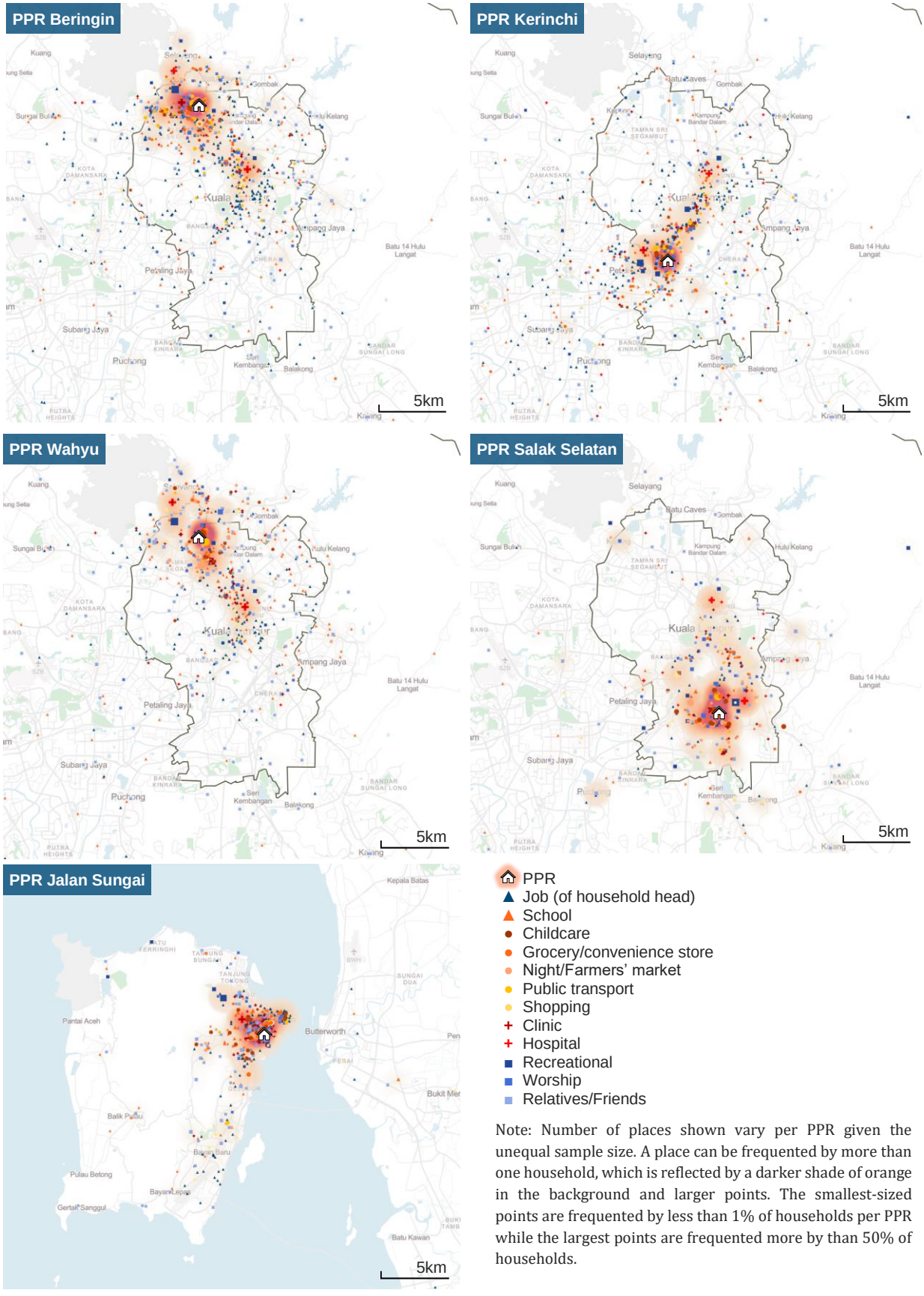
4.1.1. A visualisation of households' spatial ecosystem

To understand the prevailing spatial ecosystem of PPR residents, the surveyed respondents were asked where they go for work, send their children to school or for childcare, seek health services, do their shopping, and engage in leisure and social activities—essentially their spatial ecosystem. These are mapped as individual points in Figure 4.1, overlaid against a density plot which is darker over areas that have a higher concentration of frequented places[146]. It appears that for residents from each PPR, most frequented places were concentrated in areas nearby. There also seems to be frequent visits to the city centre of Kuala Lumpur from residents in the KL PPRs, and George Town for residents of PPR Jalan Sungai in Pulau Pinang.

[145] Suraya Ismail et al. (2019)

[146] A place can be frequented by more than one household, reflecting a darker shade of orange in the background and larger points.

Figure 4.1: Places frequented by PPR residents, by PPR

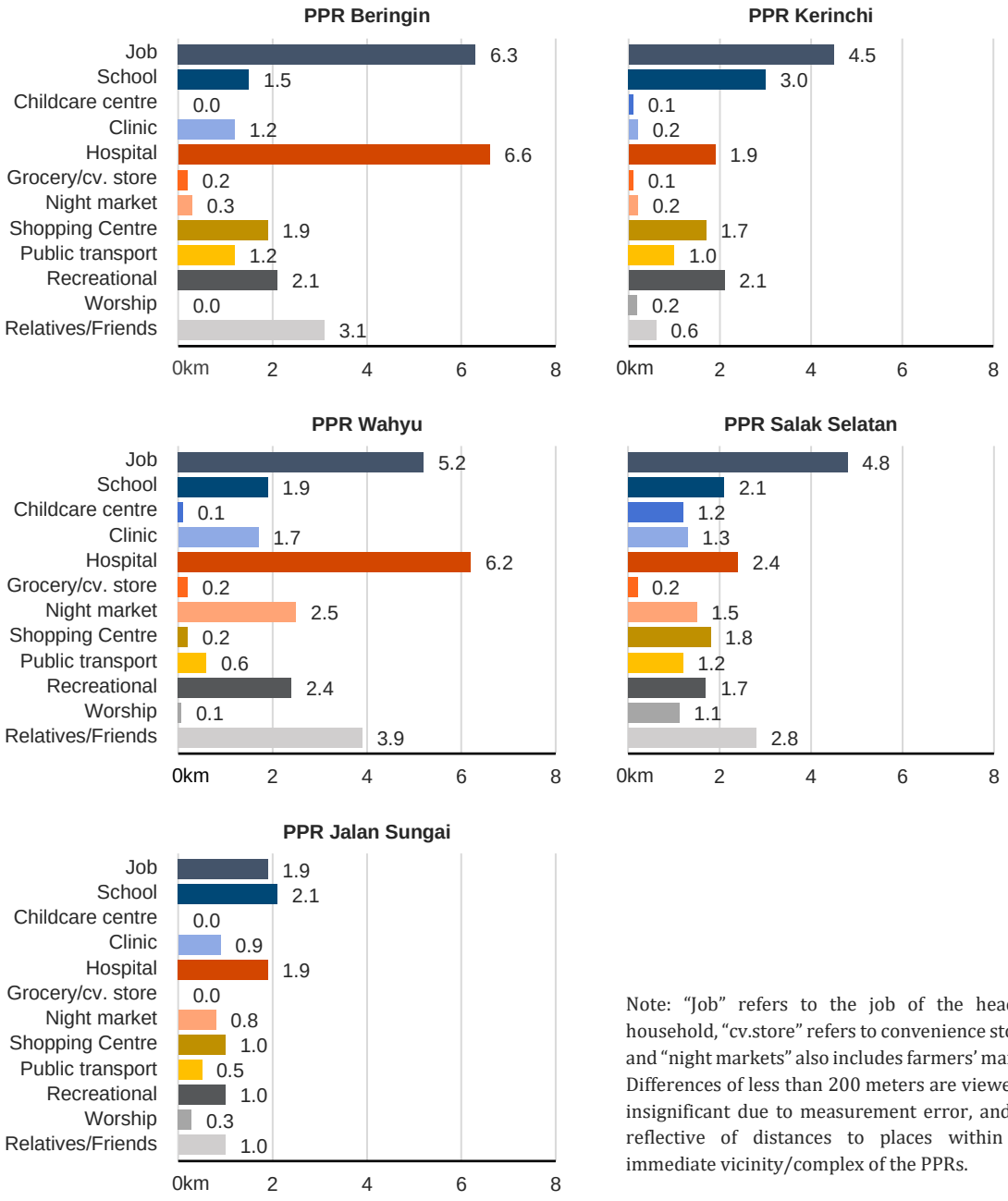


Note: Number of places shown vary per PPR given the unequal sample size. A place can be frequented by more than one household, which is reflected by a darker shade of orange in the background and larger points. The smallest-sized points are frequented by less than 1% of households per PPR while the largest points are frequented more by than 50% of households.

4.1.2. Distances travelled

For further insight into the individual experiences of each household, the distances from their respective PPRs to their workplaces, schools and amenities were calculated. This is based on a straight-line distance calculation i.e. 'as-the-crow-flies', rather than street network[147]. The median distance for each PPR is illustrated in Figure 4.2. Complementing this is Table 4.1, which shows the distribution of places by distance offering a more comprehensive picture.

Figure 4.2: Median distance to current job, schools and amenities, by PPR (km)



Note: "Job" refers to the job of the head of household, "cv.store" refers to convenience stores, and "night markets" also includes farmers' market. Differences of less than 200 meters are viewed as insignificant due to measurement error, and are reflective of distances to places within the immediate vicinity/complex of the PPRs.

[147] Places of work and schooling that we assume as not commuted to on a daily basis are excluded from the analysis (e.g. boarding schools and outstation work places). See Appendix F for further details.

Table 4.1: Percentage of places visited by PPR households, by distance

	Distance	Job	School	Childcare	Clinic	Hospital	Grocery/ Cv. store	Night Market	Shopping	Public transport	Recreation	Worship	Relatives/ Friends
PPR	<1km	9.0%	34.6	86.6	4.2		79.4	78.0	10.0	49.4	6.9	75.8	32.6
Beringin	1 – <5	32.6	49.1	10.4	94.4	37.8	19.7	21.5	80.2	48.8	86.1	17.7	24.6
	5 – <10	30.0	8.5	2.4	1.0	61.1	0.5	0.4	8.3	1.6	5.6	5.5	16.3
	10 – <20	20.7	5.2	0.6	0.4	1.1	0.2	0.1	1.4	0.1	0.5	1.0	16.2
	≥20	7.6	2.7		0.1		0.2				1.0		10.4
PPR	<1km	19.5	33.8	83.2	84.9	0.2	88.8	99.0	5.4	55.2	15.0	89.4	59.6
Kerinchi	1 – <5	31.9	47.4	13.3	12.9	59.1	7.9	0.9	74.4	44.3	70.7	9.5	7.9
	5 – <10	26.7	7.0	3.5	1.8	39.7	2.6		17.2	0.3	12.7	0.6	12.8
	10 – <20	17.1	7.6		0.4	0.8	0.6	0.1	2.8	0.2	1.4	0.6	12.0
	≥20	4.8	4.2			0.2	0.1		0.2		0.2		7.7
PPR	<1km	16.2	6.3	70.7	49.8	0.2	95.3	4.8	78.1	98.4	6.1	74.9	19.1
Wahyu	1 – <5	30.5	68.0	22.4	47.2	49.0	4.7	93.5	12.5	1.6	84.5	20.9	34.0
	5 – <10	31.1	14.5	6.9	2.3	49.7		1.0	9.1		7.4	3.2	18.0
	10 – <20	16.5	6.0		0.7	0.9		0.7	0.4		1.7	1.0	14.9
	≥20	5.7	5.2			0.2					0.3		14.0
PPR	<1km	13.4	13.3	30.0	44.2		70.9	33.9	27.9	7.9	32.7	48.7	31.8
Salak	1 – <5	38.9	67.2	60.0	54.0	59.6	27.3	65.0	55.8	92.1	56.4	37.8	27.5
Selatan	5 – <10	26.8	10.2	10.0	1.5	39.5	1.8	0.6	14.6		5.5	10.1	10.4
	10 – <20	14.6	6.3		0.4	0.9		0.6	1.7		3.6	3.4	17.1
	≥20	6.4	3.1								1.8		13.3
PPR	<1km	29.9	14.8	68.2	52.3	0.3	87.0	91.3	44.9	92.3	49.4	85.7	50.4
Jalan	1 – <5	48.0	76.5	29.5	47.4	99.7	12.7	8.3	51.1	4.9	43.8	13.5	29.1
Sungai	5 – <10	9.0	2.4	2.3	0.3		0.3	0.4	3.3	2.8	4.3	0.8	12.6
	10 – <20	12.2	5.4						0.7		2.5		5.2
	≥20	0.9	0.9										2.6

Min Max

Note: Job refers to the job of the head of household, cv. store refers convenience stores, and night markets also includes farmers' market. Max legend highlight is for each place category per PPR.

Employment Activities

Regarding places of work for heads of households, the median distance of 2.1km for PPR Jalan Sungai in George Town is notably lower than for the other KL PPRs, which ranged between 4.5km to 6.3km. This reflects the finding that 77.8% of heads of households from PPR Jalan Sungai worked within a 5km radius, with nearly 30% working within a 1km radius. In comparison to the KL PPRs, only between 41.6% to 52.3% worked within a 5km radius, and 9% to 19.5% within a 1km radius. Nonetheless, for the household heads from the KL PPRs, the median distances can still be argued to be within tolerable commute times[148], at least via private automobiles.

Schools

The median distance travelled for schooling is considerably shorter than that of workplaces for all the KL PPRs, ranging between 1.5km to 3.0km. For PPR Jalan Sungai in George Town, the median distance to children's schools is 2.1km, a bit farther than the median distance to workplaces of 1.9km, though still within the range of the median distances for the KL PPRs.

It is worth noting that the schools accounted include pre-schools and post-secondary institutions. Given the different nature of these education institutions compared to primary and secondary schools, the median distances to each of these types of institutions also varied, with pre-schooling centres much closer to home, while post-secondary institutions are much farther away (Table 4.2). A notable comparison between the PPRs is the differences in pre-schools median distances, where the median distance from PPR Salak Selatan stands out as being far further, as it did too for childcare centres. This is because the other PPRs, in addition to having *taskas*, also have pre-schools (*tadika/tabika*) for children, while PPR Salak Selatan has neither.

	PPR Beringin	PPR Kerinchi	PPR Wahyu	PPR Salak Selatan	PPR Jalan Sungai
Pre-school	0.0km	0.0	0.1	1.4	0.5
Primary and secondary	1.3	2.9	1.8	2.1	2.0
Post-secondary	10.7	12.9	11.1	14.1	6.2

Min Max

[148] Tolerable commute times can vary between individuals and societies, and a standard has yet to be determined for Malaysia and its cities. For example, a study of Chinese commuters suggests a tolerable commute time of 45 minutes (Huang et al. (2018)). It finds that 45 minutes is an inflection point: those with commutes exceeding it prefer shortening their commutes by moving homes, while those with shorter commutes are willing to increase travel times for better jobs or homes.

Daily-needs activities and key services

Many of the visited key amenities are within 400 meters (a universal standard for 'walkable'[149]), especially those that are necessary for daily needs. These include grocery/convenience stores[150], night/farmers' market (i.e. *pasar malam/tani*), childcare centres and places of worship[151]. A notable exception includes PPR Salak Selatan, where only the median distance to frequented grocery/convenience stores are within the 400 meters benchmark, while other amenities frequented have a median distance of over 1km.

In other exceptions, amenities present in the complex are not widely utilized since preferred alternatives are situated nearby—extending further the median distances travelled. For example, places of worship do exist within the PPR complex of PPR Salak Selatan, but more than half of respondents reported frequenting those outside the complex. Likewise, a night market is available adjacent to PPR Salak Selatan, but more than two-thirds of residents chose to frequent a market further away. Similarly, PPR Wahyu has a median distance to night markets that is relatively far at 2.5km, despite the availability of a nearby night market within Taman Wahyu itself that only a minority of residents frequented.

For clinics, the median distance ranged from 0.9km to 1.7km across all the PPRs except for PPR Kerinchi where it was much lower at 0.2km. For PPR Kerinchi, the low distance reflects that most respondents chose to frequent the clinic that's within the complex. For PPR Beringin and PPR Wahyu, while clinics are present within the PPR complexes, the relatively higher median distance was attributed to a considerable portion of respondents who chose to frequent a clinic outside the complexes. Meanwhile, PPR Salak Selatan and PPR Jalan Sungai have no clinics within their complexes, although there are options within 1km radius which nearly half of the respondents frequent.

Public transportation

For public transit stations visited by the PPR residents, the median distance is 0.6km and 0.5km for PPR Wahyu and PPR Jalan Sungai, while it ranges from 1km to 1.2km for the other three PPRs. However, the median distances for the latter three PPRs are arguably beyond walkable. This reflects a first-and-last mile problem that likely discouraged residents from using public transport, as more than half of the respondents across all the KL PPRs report not using public transport at all or for at least once a week, while private vehicle ownership rates stood high. In contrast, public transport usage among PPR Jalan Sungai residents was higher, as around half of the respondents did report using it at least once a week.

[149] While the threshold originated in western contexts and has receive contentions (see Diyanah Inani Azmi et al. (2012)), it has been adopted in Malaysia for public transport planning (e.g. the National Land Public Transport Master Plan).
[150] More often than not, stores within the PPR complexes were reported as the place frequented for that particular category, rather than supermarkets that tend to be further away.
[151] We did not collect frequency data on childcare centres given the assumption that they are every weekday, as with for jobs and schools.

Recreational and Social Activities

The recreational and social spaces visited by the PPR residents are generally farther than amenities for daily needs, but were still closer than their workplaces. For recreational places , the median distance for PPR Beringin, PPR Kerinci and PPR Wahyu residents ranges between 2.1km to 2.4km. Meanwhile, for PPR Salak Selatan, the median distance is closer at 1.7km, as the percentage of recreational places visited within 1km was at least double that of the three PPRs, at 32.7% vs a range of 6.1% to 15% for the three. For PPR Jalan Sungai, the median distance is considerably closer at 1km, with 50.4% of recreational places frequented within 1km.

As for the homes of relatives and friends, the median distance for PPR Kerinchi and PPR Jalan Sungai residents were considerably lower at 0.6km and 1km, respectively. For PPR Wahyu, the median distance that is the highest at 3.9km, while the PPR Beringin and PPR Salak Selatan also had relatively high median distances at 3.1km and 2.8km.

Box 4.1: Between malls and parks—where do residents go to?

Recreation and leisure are increasingly recognised as key to the quality of life and overall societal welfare[152]. Public and open spaces such as parks play an important role. For example, studies have highlighted that access to parks allows people to exercise more while increasing contact with the natural environment that is likewise positive for physical and psychological health[153]. There are also social benefits arising from the opportunities of community activities that build social ties and the sense of community, with also evidence of crime reduction[154]. However, the general trend in Malaysia seems to suggest that more our urban spaces are being taken up by shopping malls[155].

For PPR Beringin residents, nearly 90% reported going to parks, while only 0.3% reported going to malls. Similarly, for PPR Kerinchi, over 83% go to parks while only 0.2% go to malls. For PPR Wahyu, more than 92% go to parks and zero reported going to malls. For Salak Selatan, the percentage of those who reported going to parks is lower at about 60%, while under 2% go to malls. Lastly, for PPR Jalan Sungai, an even smaller percentage reported going to parks at around 43%, while about 0.6% go to a mall.

However, most of the parks frequented by the PPR residents are not within walking distance. For example, the most frequented park for PPR Beringin residents is Taman Layang-Layang Metropolitan Kepong. This is about 2km away from PPR Beringin and nearly 80 % of the residents go there. Other parks frequented by most respondents from the other PPRs are of similar distance, except for those from PPR Jalan Sungai, where the most visited park is about 4km away. As such, it is likely that visits to parks require some means of transport, which would incur extra costs for already poor households.

[152] Neulinger (1982), Shaw (1985), Mansfield et al. (2020)
[153] Sherer (2003)
[154] Sherer (2003)
[155] The supply of shopping complexes which includes malls and hypermarkets has consistently increased, from a total space of 15.5 million m^2 in 2017 to 17.3 million m^2 in 2021. Source: NAPIC (Various years)

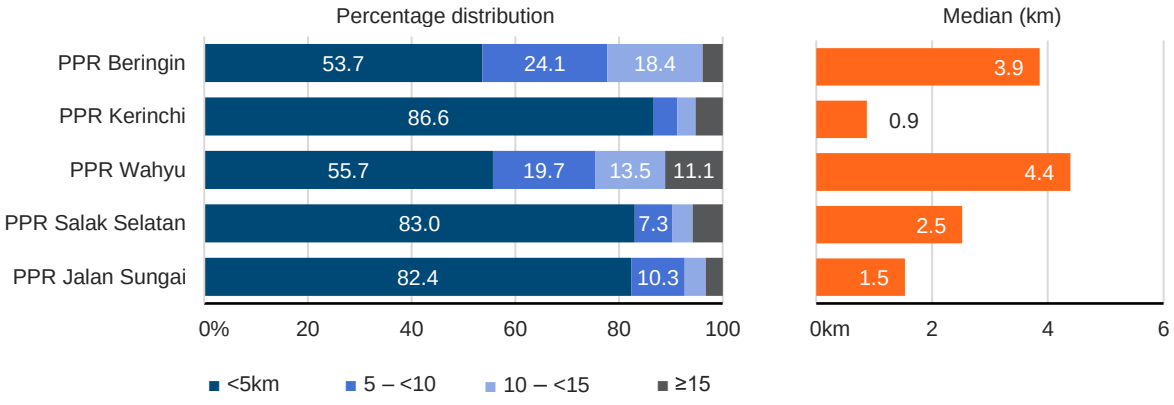
A very small proportion of residents chose to primarily spend their recreational time within their PPR complexes at the provided shared spaces. The percentage of these respondents vary across the PPRs. For PPR Beringin and PPR Wahyu, only 6.9% and 4.4%, respectively, chose to spend their time within their PPR complex, despite the availability of two playgrounds and spaces for sports. A higher percentage of respondents from PPR Kerinchi chose to spend their recreational time within the PPR complex, although it has approximately the same level of sports and recreational spaces as PPR Beringin and PPR Wahyu. For those from PPR Salak Selatan, where the only recreational space comes in the form of only one playground, 25.6% chose to spend their recreational time within the PPR complex.

4.2 Relocation of Households to the PPRs and its Impact

The experiences of relocation matters, as it may change the dynamics of the spatial and social ecosystem. Prior studies suggest that these tend to be disruptive to the quality of life and welfare of residents especially[156].

Rather fortunately for the PPR residents surveyed, many of their previous homes were in the same general area (Figure 4.3). Among residents from PPR Kerinchi, PPR Salak Selatan and PPR Jalan Sungai especially, the majority used to stay less than 5km away, comprising more than 80% of residents from these PPRs. The median distances to their previous homes ranged between 0.9km to 2.5km from their respective PPRs. For residents from PPR Beringin and PPR Wahyu, fewer had similar experiences at over 50%, reflecting a higher median distance of 3.9km and 4.4km respectively.

Figure 4.3: Percentage of households by distance from previous home and median distance, by PPR

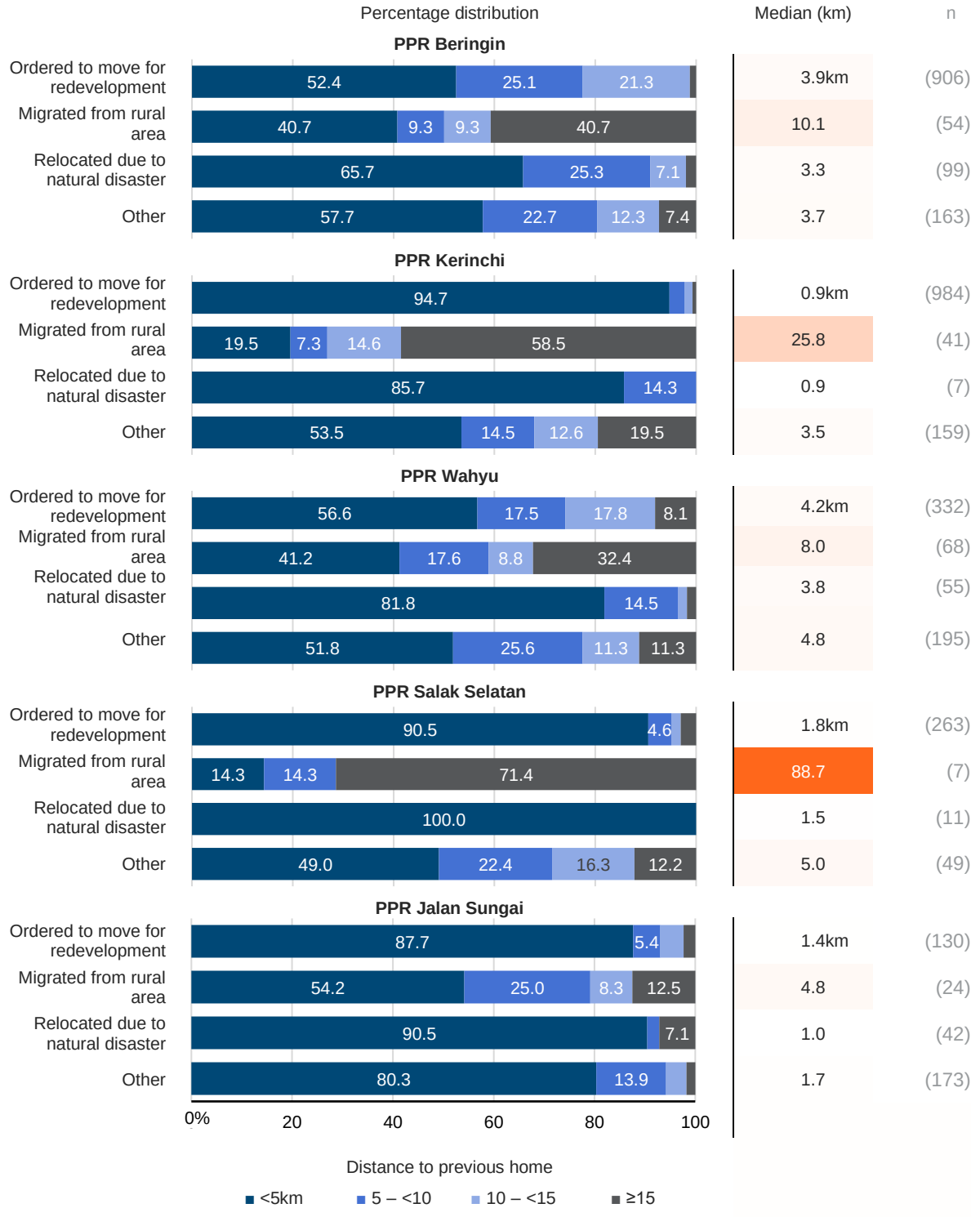


This is despite most having been ordered to move to make way for redevelopment, particularly for those in the KL PPRs, as highlighted earlier in Figure 2.11. In fact, very few who were ordered to move used to stay further than 15km, as with those who were relocated due to a natural disaster (Figure 4.4). Relocation farther than 15km was generally more prominent among those who moved for reasons more voluntary in nature.

[156] Chen and Shin (2019)

However, does this then mean that relocation was a relatively smooth transition for the residents, with little to no disruption in their ecosystem? This is examined further in the next subsections, particularly with regard to employment and schooling.

Figure 4.4: Percentage of households by distance from previous home and median distance, by reasons for moving and PPR



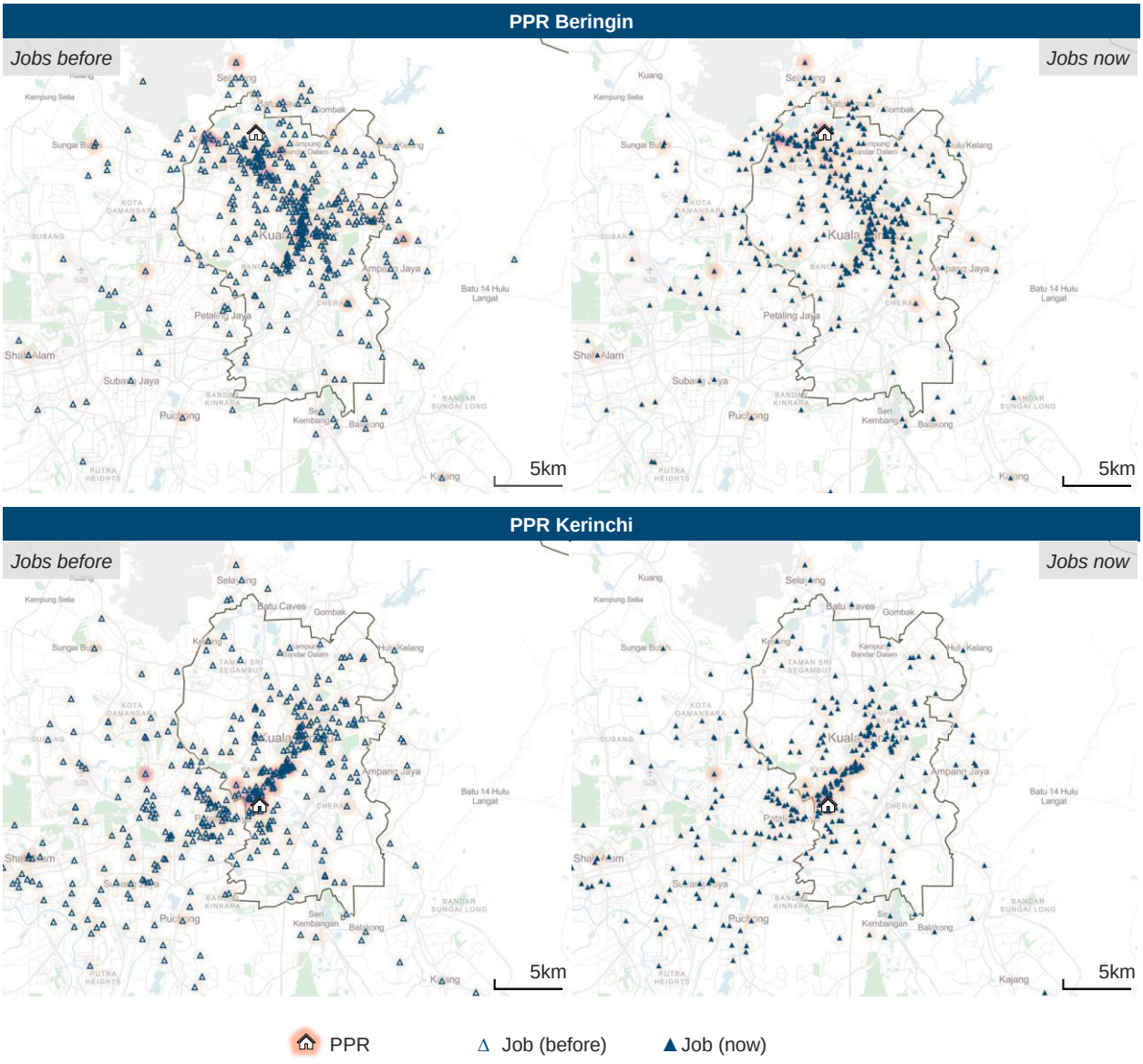
Note: Total number of respondents reported in parenthesis.

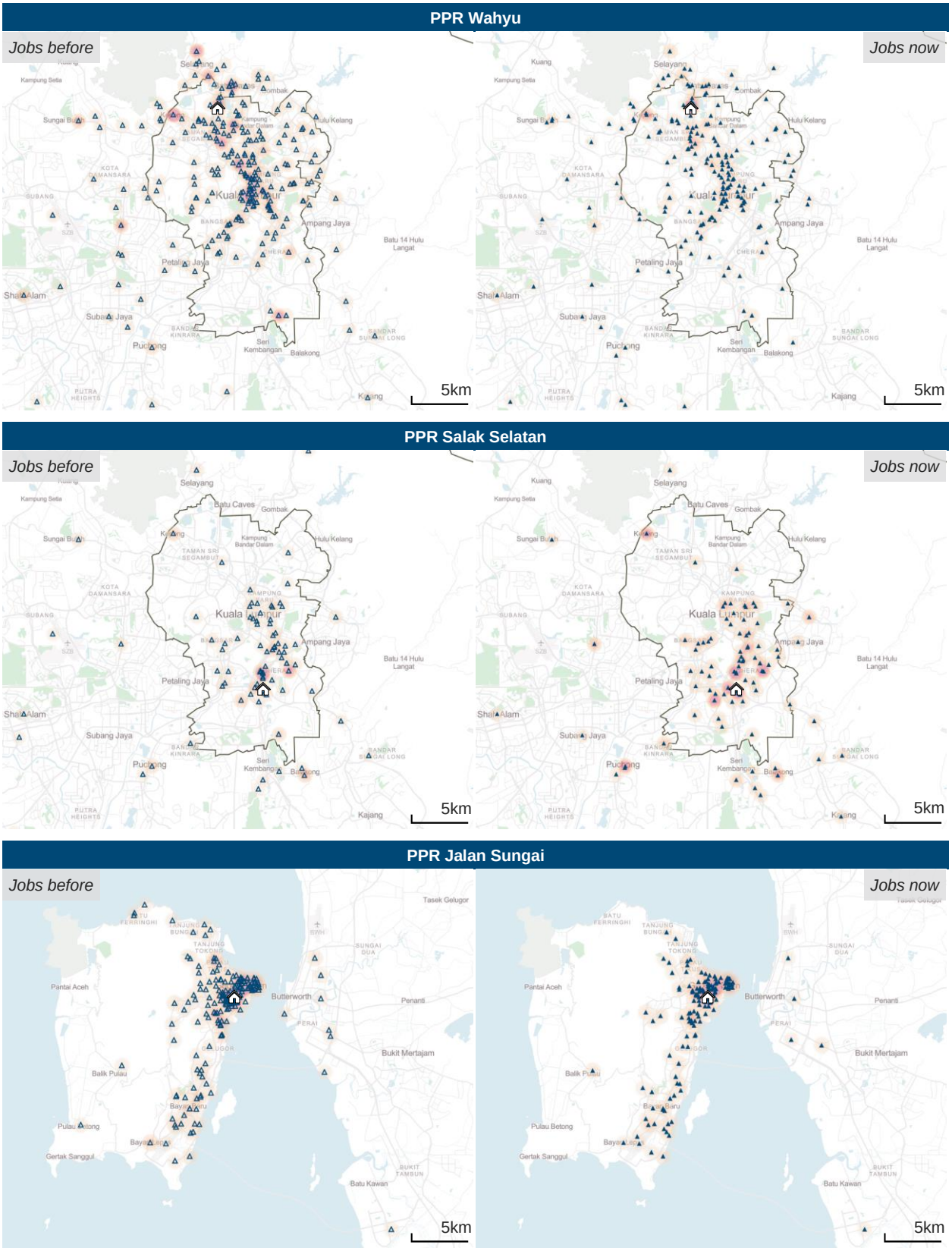
4.2.1. Employment: Have workers managed to keep their jobs?

Respondents in the study were asked about their household head's workplace before and after moving to the PPRs. This comparison provides a gauge of how PPR residents have fared with the transition.

Figure 4.5 maps these two locations. Visually, it appears that the spread of jobs has narrowed slightly, becoming more concentrated around the PPRs. An exception to this is PPR Salak Selatan.

Figure 4.5: Job locations of household heads before moving to the PPRs and current



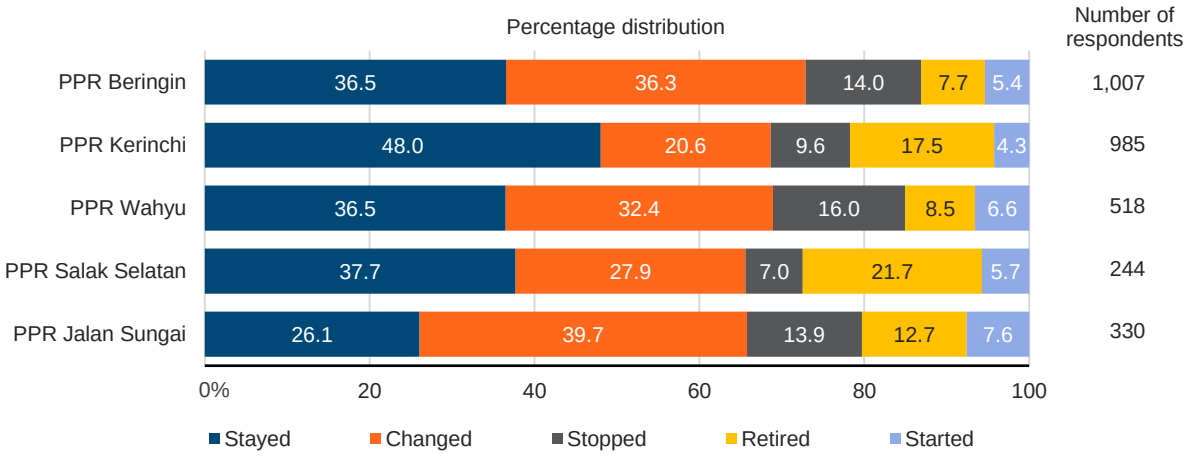


Note: Number of places shown vary per PPR given the unequal sample size. This excludes those whose job locations could not be geoclassified due to missing or unspecified data.

Against the visual differences in job locations, it is found that a considerable percentage of household heads from each PPR had changed their workplace ever since moving to the PPRs (Figure 4.6). PPR Jalan Sungai reported the highest percentage at 39.7%, which is notably more than those who stayed at their original workplace. In contrast, in the other PPRs, more household heads stayed at their prior workplaces, though the difference was only marginal in PPR Beringin.

A notable percentage of household heads had also retired, between 7.7% and 21.7%, with PPR Salak Selatan having the highest percentage. Of those who stopped working and have either classified themselves as not working, unemployed or homemakers, PPR Wahyu recorded the highest percentage at 16%, while PPR Salak Selatan recorded the lowest at 7%. While these percentages seem large, a bulk of them consisted of household heads in retirement age who identified as "not working" rather than "retired". Those who used to work pre-relocation but then later reported as "unemployed" (i.e. actively looking for employment) make up less than 1% of household heads from each PPR. It is also worth noting that a small percentage of household heads have started working ever since moving to the PPRs.

Figure 4.6: Percentage of household heads by decision to change jobs since moving to PPR



Note: This excludes those whose job locations could not be geoclassified due to missing or unspecified data.

Nevertheless, regarding the considerable incidence of job changes among the PPR household heads, it is found that upward household income mobility was more prominent among household heads who changed jobs. However, more severe cases of downward income mobility were also more prominent among household heads who changed jobs, while incidences of job changes were more prominent among households with presently lower incomes. These findings may have little in relation to the relocation process to the PPRs, but the ability to maintain some degree of employment by most residents was at least likely facilitated by the favourable location of the PPRs. Nonetheless, the incidences of job changes are further explored between households of different profiles to better understand the impact of households' relocation to the PPRs.

Explaining job relocation: years of occupancy in PPR

One of the key qualifying criteria of the study is to examine the impact of relocation after a period of time because most new settlement areas have gestation periods to mature as a thriving area. However, since most of the PPR residents in the study relocated from within their original ecosystem, most households could still continue with their prior jobs or find new ones.

Recalling from Figure 2.9 in Chapter 2, most of the PPR households were long-time residents. The majority from PPR Kerinchi had at least five years of tenure, while households in the other four PPRs had a housing tenure of at least 10 years. Those with less than one year of tenure made up a small share of residents in each PPR, between 0.8% to 2.4%. Thus, the considerable percentage of household heads who changed their jobs was partly due to most progressing through their careers, as many years had passed ever since they first moved to the PPRs.

Reflecting this, incidences of job changes or stops were generally more prominent among household heads with longer tenures (Figure 4.7). For PPR Beringin, PPR Kerinchi and PPR Wahyu especially, household heads who relocated recently (a year ago or less) were more likely to have stayed in their prior jobs. These findings suggest that relocation did not have a significant impact on employment for most household heads from these PPRs.

However, in PPR Jalan Sungai where there were more household heads who had changed their jobs than those who hadn't, job changes were most prominent among households with a tenure of one year or under, at 66.7%. However, the portion of those who changed jobs among households with longer housing tenures were still a considerable size at 42.9% to 61.1% of household heads.

Explaining job relocation: reasons for moving to PPR

The comparison of job relocations was also made between the reasons for moving into the PPRs. It shows that those who were 'ordered to move for redevelopment' or were 'relocated due to natural disaster' did not necessarily display the greatest tendency to change their jobs (Figure 4.8). This is likely because very few had to move from far away, including among those forced to move, as highlighted earlier in Figure 4.4.

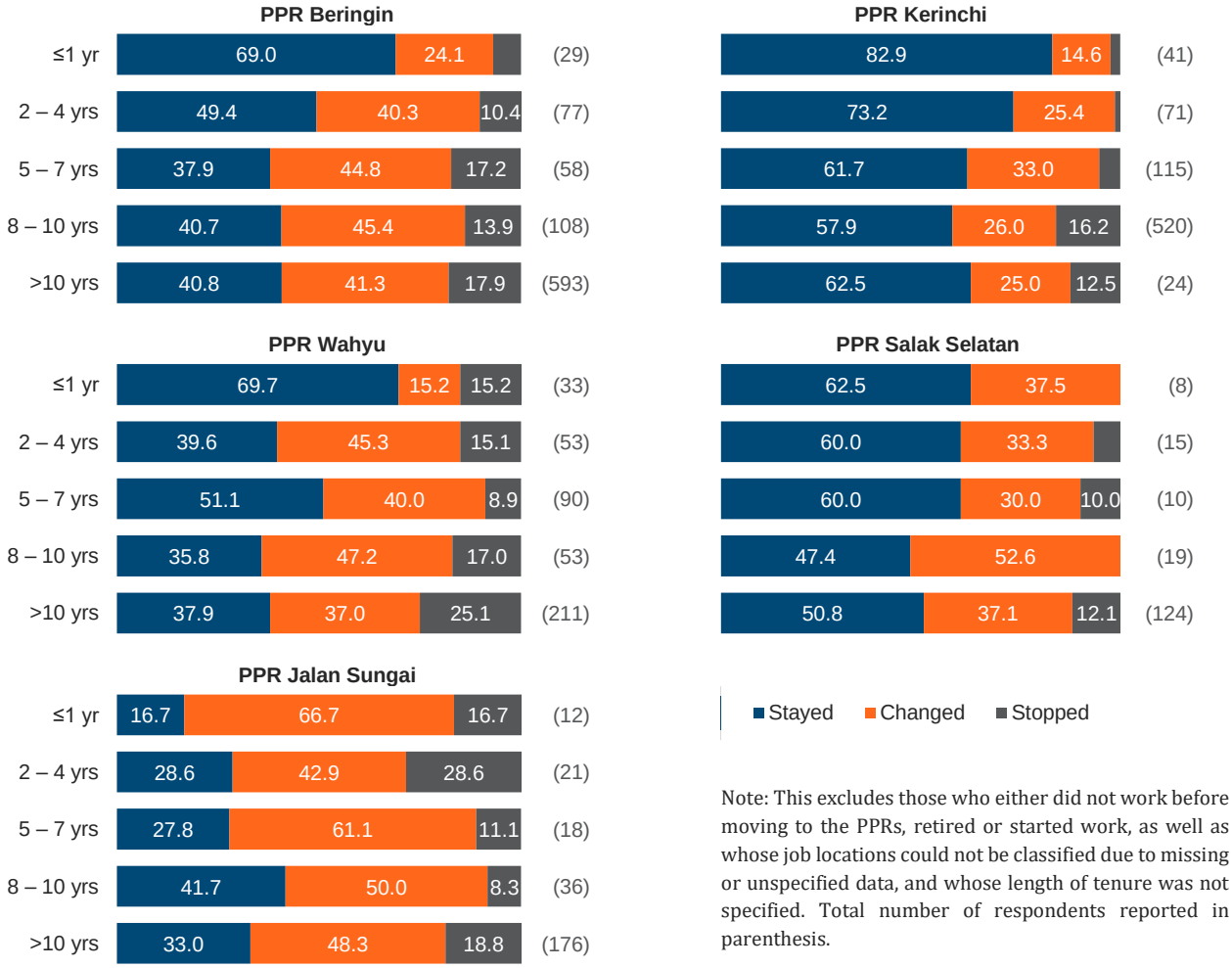
Explaining job relocation: previous employment sector

Most of the household heads who changed their jobs were those who used to work in the private sector prior to relocating to the PPRs. However, this was simply because most of the household heads used to work in that sector (as illustrated earlier in Figure 2.21), and not because private sector workers had a greater propensity to change jobs. Figure 4.9 shows that, among those who worked in the private sector, there were more who stayed at their prior workplace after relocating to the PPRs. The exception was PPR Jalan Sungai residents.

However, comparing between the different job categories, household heads who used to be self-employed or work part time had the lowest propensity to have stayed at their prior workplace. This was due to notably higher incidences of household heads stopping work, unsurprisingly given that this line of work is widely considered to be more precarious[157]. However, it was interestingly not necessarily due to higher incidences of job changes, with comparable rates to other job sectors.

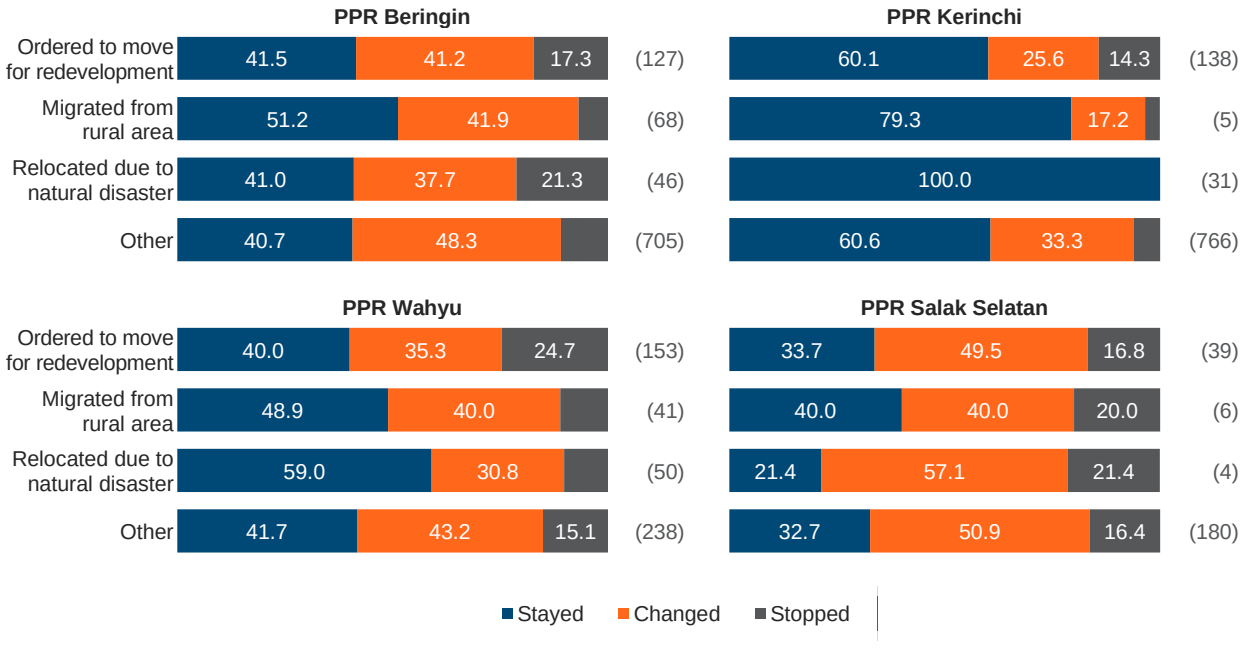
[157] KRI (2021)

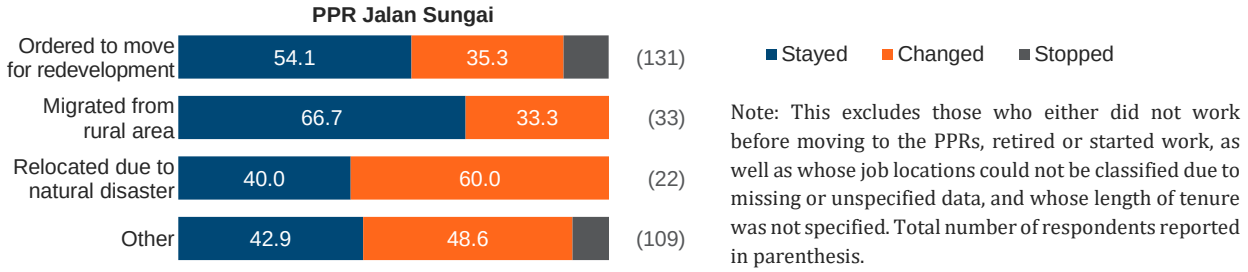
Figure 4.7: Percentage of household heads by decision to change jobs, by years in PPR



Note: This excludes those who either did not work before moving to the PPRs, retired or started work, as well as whose job locations could not be classified due to missing or unspecified data, and whose length of tenure was not specified. Total number of respondents reported in parenthesis.

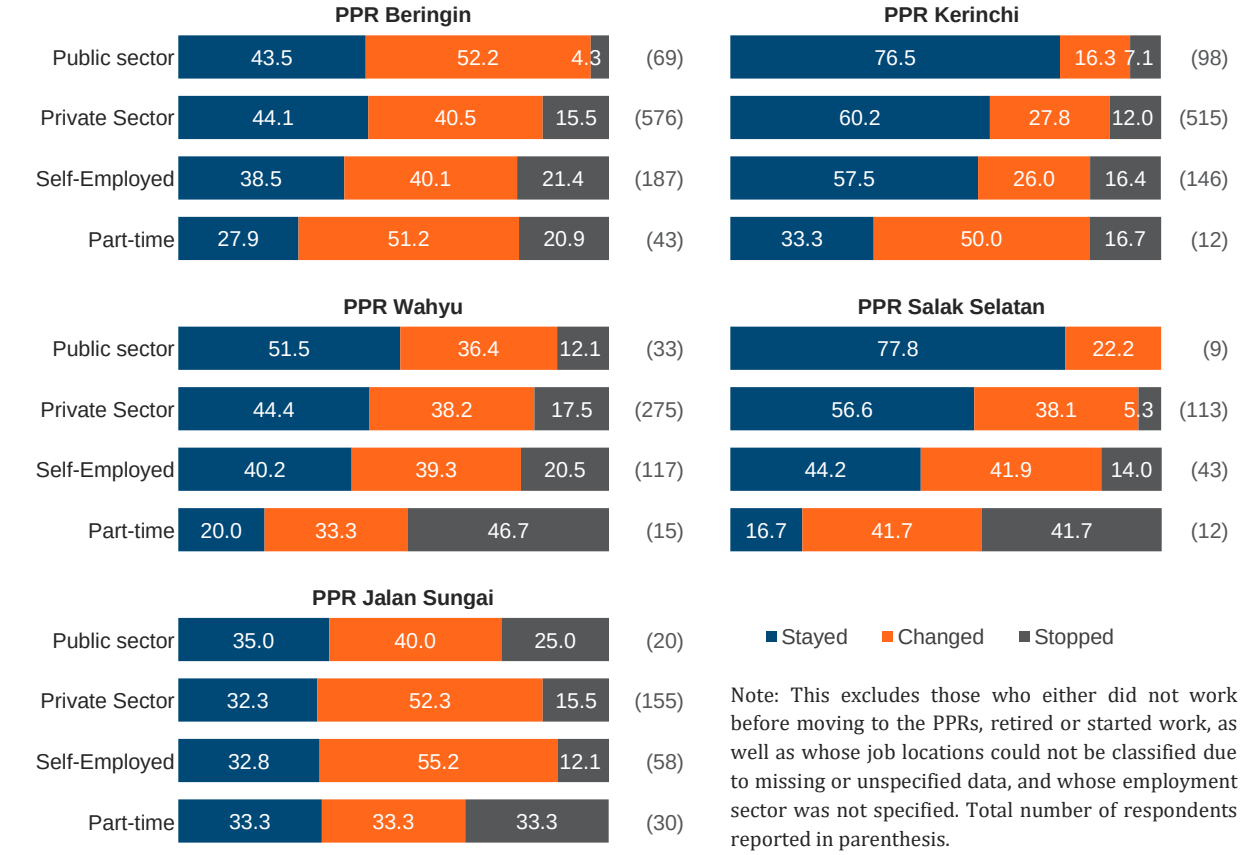
Figure 4.8: Percentage of household heads by decision to change jobs, by reasons for moving to PPR





Note: This excludes those who either did not work before moving to the PPRs, retired or started work, as well as whose job locations could not be classified due to missing or unspecified data, and whose length of tenure was not specified. Total number of respondents reported in parenthesis.

Figure 4.9: Percentage of household heads by decision to change jobs, by previous job sector



Note: This excludes those who either did not work before moving to the PPRs, retired or started work, as well as whose job locations could not be classified due to missing or unspecified data, and whose employment sector was not specified. Total number of respondents reported in parenthesis.

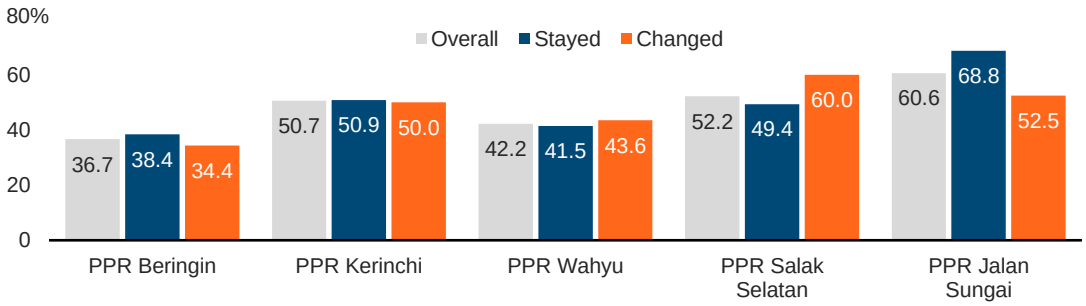
How has the relocation to the PPRs changed the distance to work?

Some respondents cited the decision to move into PPRs was due to the need to be closer to jobs, where new places will present new employment opportunities or will enable them to be closer to their existing jobs. However, this may not have applied for the vast majority who moved for other reasons, especially those ordered to relocate. For those who kept their jobs, it may have come at the expense of a longer commute. Meanwhile, for those who changed jobs, it may have been in pursuit of a shorter commute or of better opportunities.

According to Figure 4.10, the percentages of household heads reporting shorter commute distances than before the relocation were not entirely profound; 50.7% from Kerinchi, 52.2% from Salak Selatan and 60.6% from Jalan Sungai. In the other two PPRs, Beringin and Wahyu, less than half worked closer from home than they did before relocation.

Comparing between those who kept their jobs and those who changed, there is no statistically significant difference for PPRs Beringin, Kerinchi and Wahyu. This meant that the likelihood of longer commutes for those who did not change their jobs was not necessarily greater than those who did change their jobs. Meanwhile, the tendency for job changers to see shorter commutes post-relocation against non-changers is more apparent among PPR Salak Selatan residents, at 60% vs 49.4%. However, this difference is also not statistically significant. PPR Jalan Sungai was the only exception—those who kept their jobs had a higher propensity to work closer to home than those who did changed their jobs, at a statistically-significant difference.

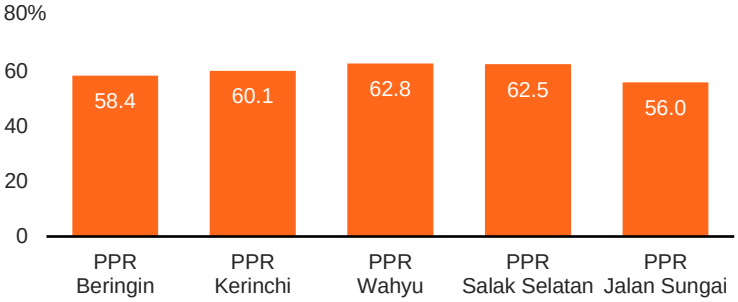
Figure 4.10: Percentage of household heads whose 'PPR to current job' distance is shorter than 'previous home to previous job' distance, by decision to change jobs



Note: This excludes those who either did not work before moving to the PPRs, had retired or started work, as well as whose job locations could not be classified due to missing or unspecified data.

To further understand the impact of relocation, we simulated the travelling distance if all household heads did not change jobs post-relocation, based on their 'PPR to previous job' distance. Comparing this distance to their current actual commute distance, Figure 4.11 shows that more than half of them would have seen longer commutes across each PPR had they not changed jobs. This comparison suggests that most job-changers were perhaps compelled by the otherwise longer commutes to their previous jobs.

Figure 4.11: Percentage of household heads who changed jobs, whose 'PPR to previous job' distance is further than 'PPR to current job' distance



Note: This excludes those who either did not work before moving to the PPRs, had retired or started work, as well as whose job locations could not be classified due to missing or unspecified data.

However, in terms of absolute distances, it is worth noting that the differences in commutes post-relocation were not all substantial. Across all PPRs, the median distance of current commutes (i.e. the 'current job from PPR' distance) is shorter for those who changed jobs than those who hadn't changed jobs (Figure 4.12a). The difference is most apparent for PPR Wahyu, where the median commute for job-changers is 3.8km, less than the 6.6km for those who didn't change jobs.

Nonetheless, for job-changers, their current commute was not necessarily an improvement from their prior experience (Figure 4.12a versus Figure 4.12b). For example, for job-changers in PPR Beringin, the median 'current job from PPR' distance is 5.3km, further than the prior 2.8km of the 'previous job from previous home' commute. Likewise, the median distance for those from PPR Salak Selatan increased, though only by 0.8km from 3.4km to 4.2km. Only job-changers in the other three PPRs saw shorter median commutes, by as much as 1.8km for PPR Kerinchi residents.

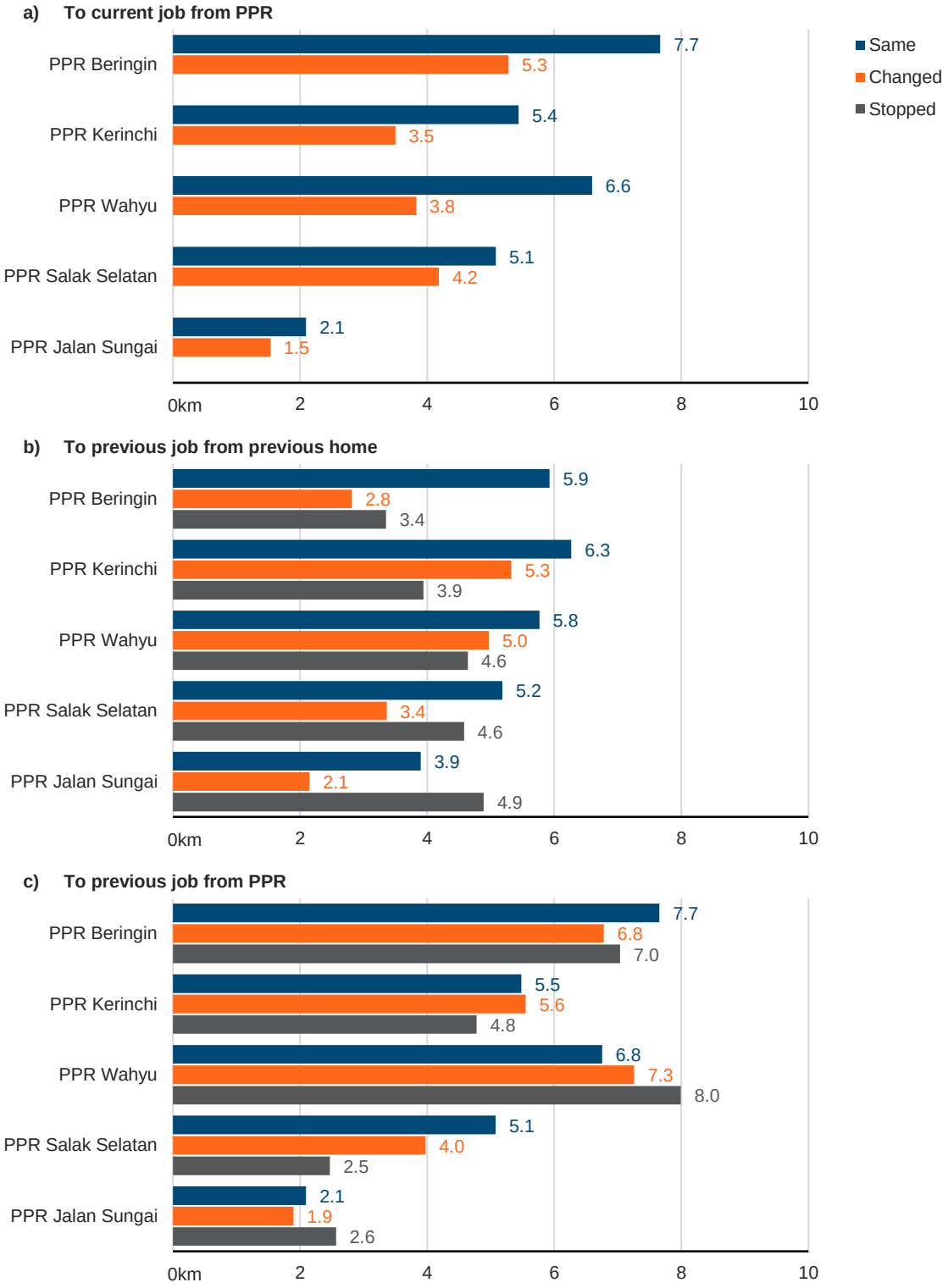
Meanwhile, among those who did not change jobs, the median distance increased for PPRs Beringin and Wahyu. This increase was as high as 1.9km for PPR Beringin, with the 'current job from PPR' median distance at 7.7km against the prior 5.9km. This means that between those who changed and did not change their jobs from PPR Beringin, both saw a higher median distance ever since relocating. This corresponds with PPR Beringin having the smallest share of household heads who saw shorter commutes, shown earlier in Figure 4.10. For PPR Wahyu, the median distance increased also for those who kept their previous jobs, though only by 0.8km. For the other three PPRs, the median distance shortened, by up to 1.8km for PPR Jalan Sungai residents.

Simulating the outcome if all residents had kept their previous jobs, we measure the distance of 'previous job from PPR'. Based on this, Figure 4.12c in comparison to Figure 4.12a depicts that median distances for job-changers would have been greater than the current situation for PPRs Beringin, Kerinchi, Wahyu and Salak Selatan. This is most apparent among those from PPR Wahyu, where if job-changers had not changed jobs, they would have seen a median commute distance of 7.3km, longer than the 3.8km they instead saw having decided to change jobs post-relocation.

Nevertheless, it is worth noting that these potentially longer commutes for job-changers had they not changed jobs would have still been on par or lower than the median distances travelled by those who had not changed their jobs post-relocation. This suggests that household heads were not entirely "forced" to change jobs as the distances endured would have still been tolerable for them to continue working at their prior workplaces. Instead, the changes in jobs may be due to other factors, include personal choices supported by available job opportunities from the urban-centric location of their PPRs.

A similar observation can be made for those who stopped working. The median distance they would have had to traverse to their old jobs from their PPRs, if they continued working, is not all that farther than the median distances of those who kept their jobs, and in some cases, it is shorter. This shows that distances post-relocation may not have been a factor in why some household heads stopped working, but rather due to other factors such as age given that most in this group are in retirement age.

Figure 4.12: Median distance to household heads' job (km)



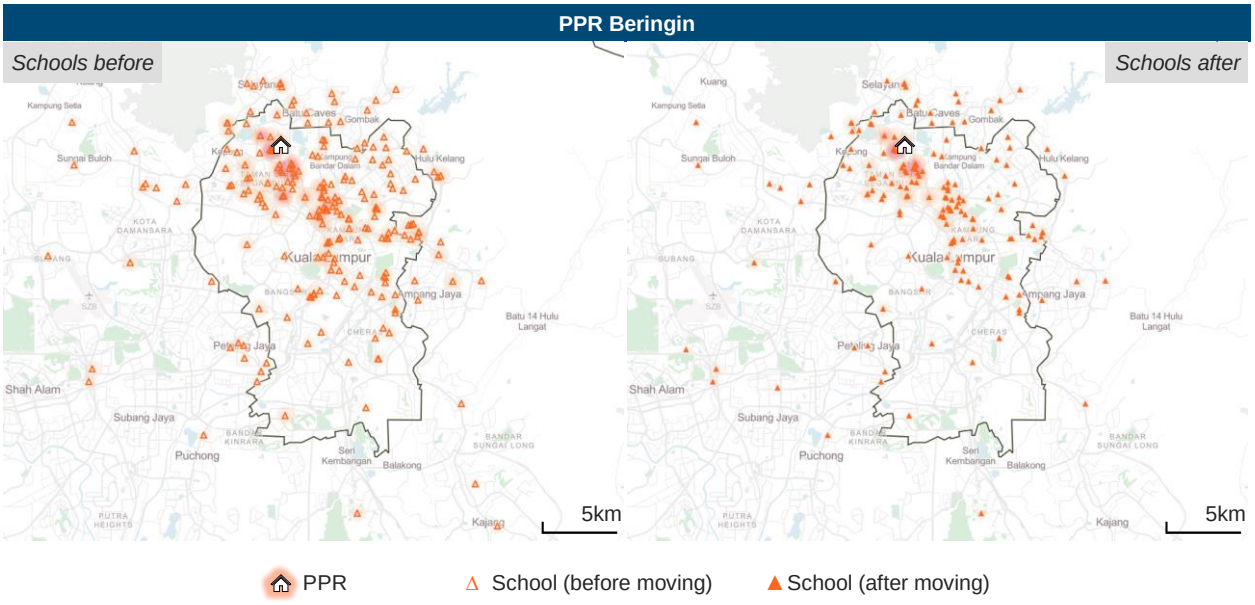
4.2.2. Schools: Have children been forced to changed schools?

The impact of the relocation to PPRs on the schooling of children is also an important factor to consider. Given that the schools that children attend are typically based on where they live due to zonal systems, a relocation that traverses administrative boundaries are likely to result in school transfers. However, if children are forced to transfer schools, for reasons other than promotions (e.g. from primary to secondary), it may cause children to miss or repeat lessons, postpone assessments or lose credits, or experience stress and anxiety during the process of adjustment. This could lead to negative educational and behavioural outcomes, including dropping out of school[158].

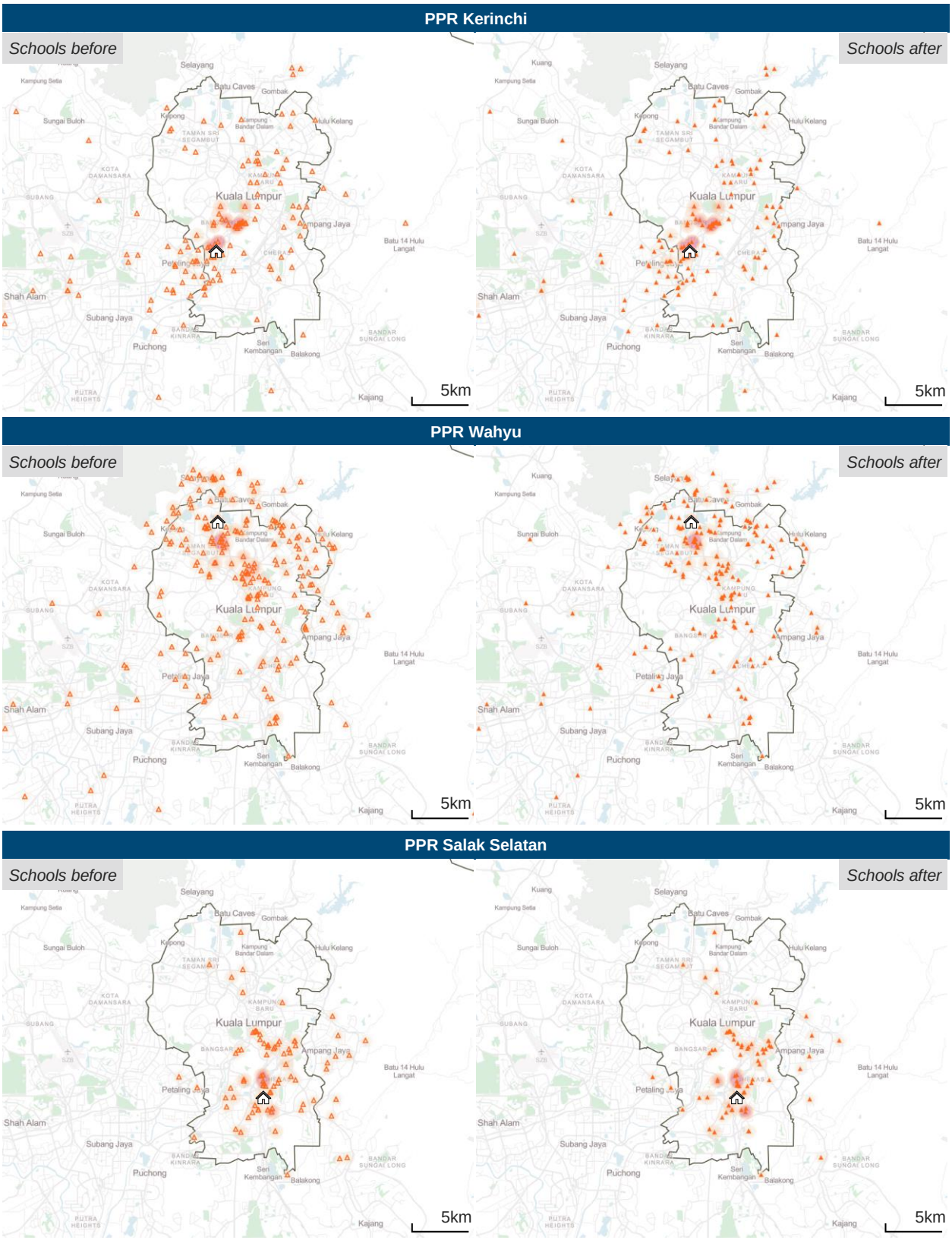
Thus, respondents were asked to report the schooling information of children before they moved and after they moved to the PPRs. However, this was only done for the KL PPRs, and not for PPR Jalan Sungai, where respondents were only asked for schooling information before moving and subsequently of the current schooling during the survey period (rather than immediately after the relocation).

Drawing from the visual analyses below of the geographical distribution of schools, the schooling ecosystem appears to be more concentrated near the PPRs (Figure 4.13). In the case of PPR Kerinchi and Salak Selatan, there is no clear difference.

Figure 4.13: PPR children's schooling locations, before and after moving to PPRs



[158] Gasper et al. (2012), and Rumberger and Larson (1998)

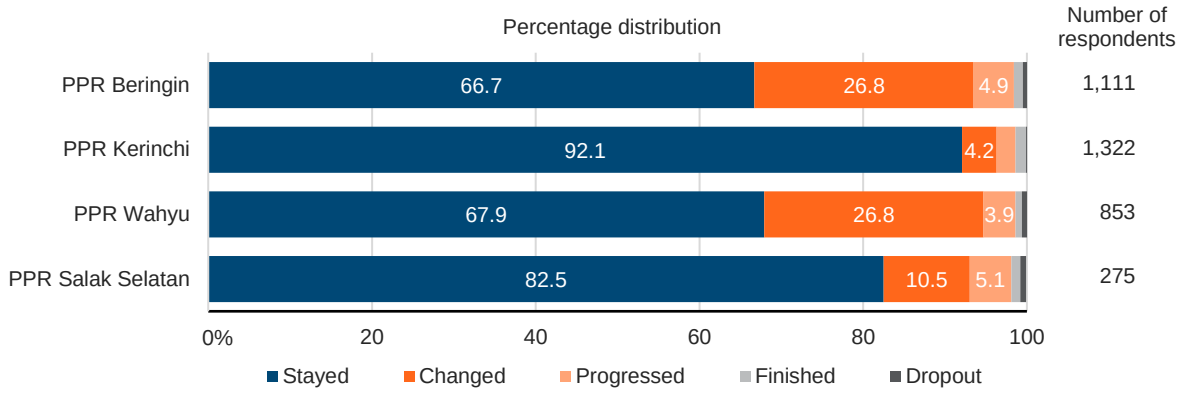


Note: Number of places shown vary per PPR given the unequal sample size. This excludes those whose schools could not be geoclassified due to missing or unspecified data.

What do the numbers suggests? Figure 4.14 show that, after moving, the majority of children across each PPR continued to attend the same schools. This was most prevalent among children from PPR Kerinchi, where 92.1% stayed in their old schools, while only 4.2% changed. Meanwhile, a lower percentage of children from PPR Beringin and PPR Wahyu stayed in the same school, at 66.6% and 67.9%, respectively, while 26.8% of children from both PPRs changed schools, higher than other PPRs.

A very small percentage of children, however, did drop out after moving, ranging from 0.1% to 0.7% of children per PPR. These are children who did not attend any form of schooling after moving while not having acquired at least upper secondary education by that time (i.e. Form 4 and 5). Most of them only acquired lower secondary education, while a small number only had primary education level attainment. Another small number of children were children who attended pre-school before moving but stopped attending after moving—they did resume schooling up to upper secondary later on in their life, yet they are still classified as dropouts to reflect the gap in their schooling years. Those who did not attend schooling after moving but have acquired upper secondary education are classified as having "finished" school.

Figure 4.14: Percentage of children by decision to change schools after moving to PPR

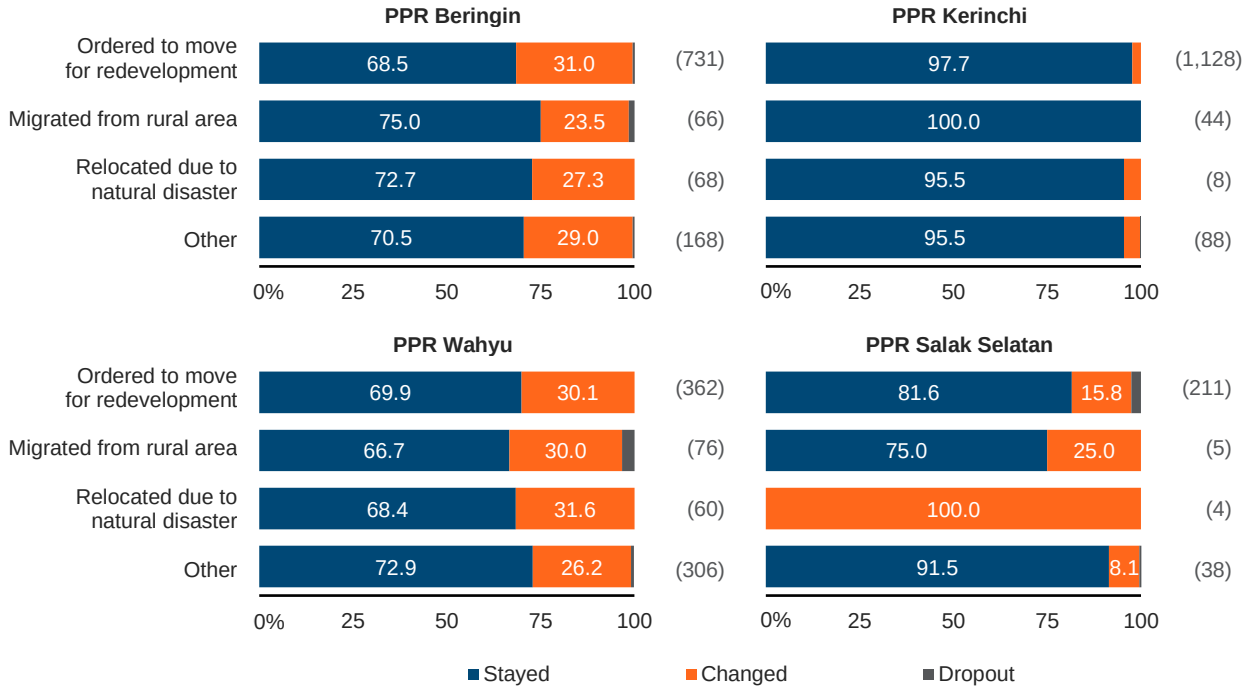


Note: This excludes 1) children who did not attend school before but started schooling after moving to the PPRs, 2) children who did not attend schooling before and after moving, 3) children whose schools could not be geoclassified due to missing or unspecified data.

Explaining school transfers: reasons for moving to PPRs

School disruptions can occur if a household is forced to relocate from a far-away place, in which case children should be more likely to change schools. However, Figure 4.15 shows that children who did not change schools made up the majority across all groups in each PPR, with little variation between households who moved for different reasons. For example, for those from PPR Beringin, children who stayed consistently made up around 70% per group, while in PPR Kerinchi, children who stayed made up at least 95% per group. PPR Salak Selatan appears as an exception, but because of the very small incidence of only four households who relocated due to a natural disaster, it may be a specific circumstance.

Figure 4.15: Percentage of children by decision to change schools, by reasons for moving to PPR



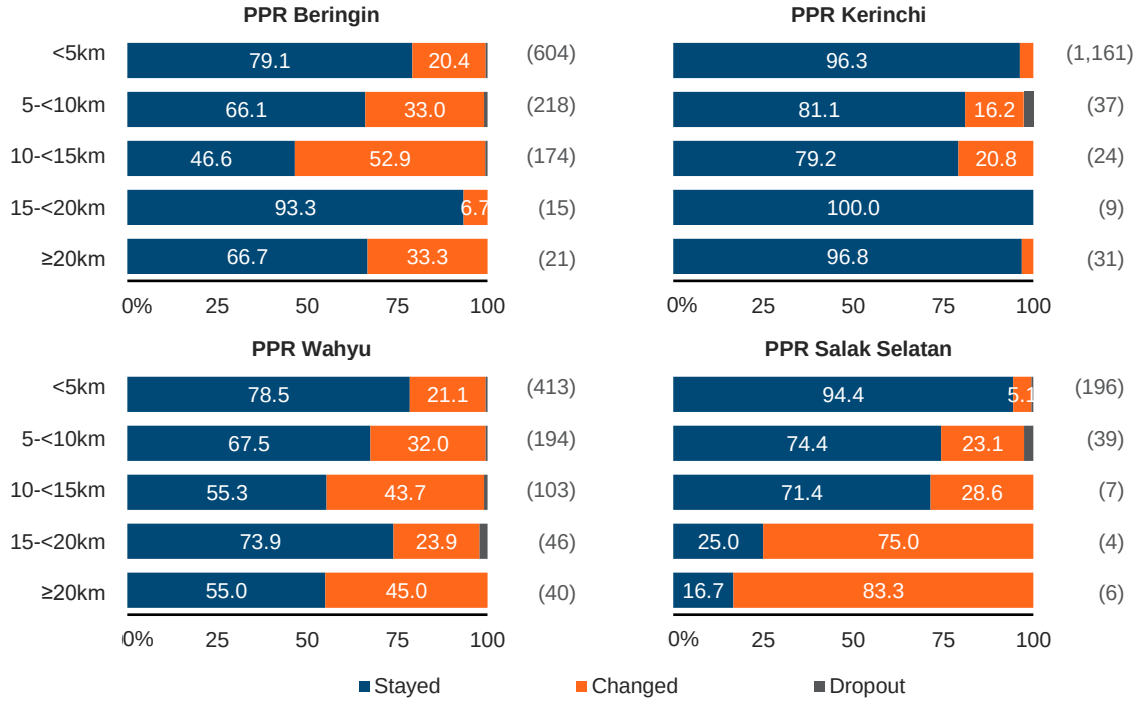
Note: This excludes 1) children who did not attend school before but started schooling after moving to the PPRs, 2) children who did not attend schooling before and after moving, 3) children whose schools could not be geoclassified due to missing or unspecified data, 4) children who progressed between primary, secondary or tertiary education. Total number of respondents reported in parenthesis.

Explaining school transfers: distance from previous homes

How far a household relocated should be among the main determinants of whether children have to transfer schools, perhaps more so than the factor discussed previously. Figure 4.16 shows that, among each group with a successively higher distance from their previous homes up to under 15km, the percentage of children who changed schools was higher across all PPRs[159]. However, for all PPRs except PPR Salak Selatan, this trend was disrupted by those who moved from further than 15km, where a lower percentage among these children changed schools than children who moved from shorter distances. Some of these children appeared to have attended schools that were far away from their previous homes, but closer to their current PPRs.

[159] Statistical tests of association confirm that there is an association between distance from old homes with outcomes in school changes.

Figure 4.16: Percentage of children by decision to change schools, by distance from previous home



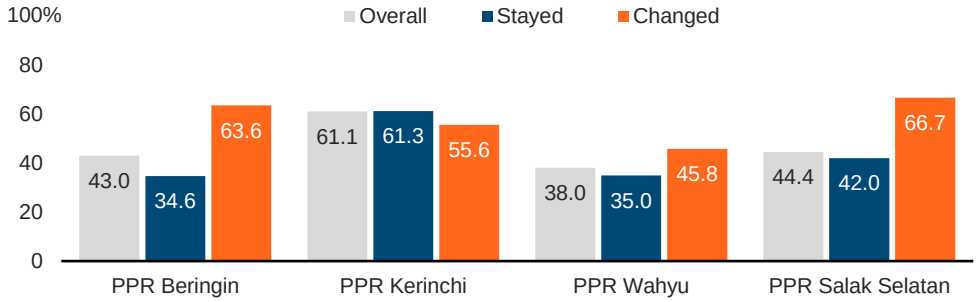
Note: This excludes 1) children who did not attend school before but started schooling after moving to the PPRs, 2) children who did not attend schooling before and after moving, 3) children whose schools could not be geoclassified due to missing or unspecified data, 4) children who progressed between primary, secondary or tertiary education. Total number of respondents reported in parenthesis.

How has the relocation to the PPRs changed the distance to schools?

Figure 4.17 reports the percentage of children whose home-school commutes were reduced after they moved to the PPRs. It shows that less than half of all children from each PPR saw reductions in distances to schools, except for PPR Kerinchi, where 61.1% saw a shorter commute after relocating to the PPR. For the PPRs where the majority did not see a reduction, this percentage was likely weighed down by the experiences of the majority of children who did not change schools.

A higher percentage of children who changed schools saw their commutes shortened compared to children who did not change schools. This is most notable among children from PPR Beringin, where 63.6% of children who changed schools saw shorter commutes. In the case of PPR Wahyu, while a higher proportion of children who changed schools reduced their commute to school compared to children who did not change schools, this proportion is still less than half, which means that the majority of children who changed schools actually had an increase in their commute. For children from PPR Kerinchi, while a smaller proportion of those who changed schools saw a reduction in their commute (55.6%) than those who did not change schools (61.3%), it is still a majority as more than half of those who changed schools saw a reduction.

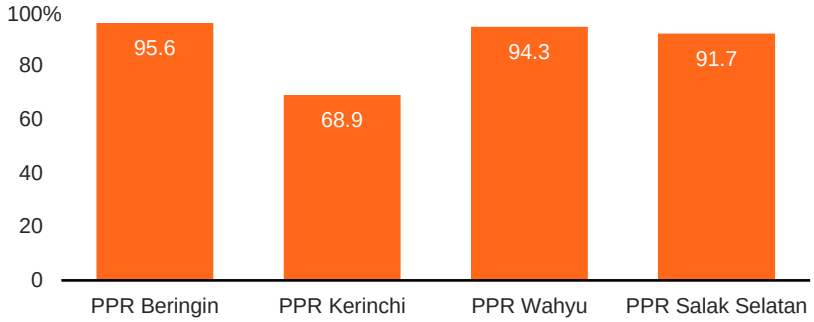
Figure 4.17: Percentage of children whose 'post-PPR school from PPR' distance is shorter than 'pre-PPR school from previous home' distance, by decision to change schools



Note: This excludes 1) children who did not attend school before but started schooling after moving to the PPRs, 2) children who did not attend schooling before and after moving, 3) children whose schools could not be geoclassified due to missing or unspecified data, 4) children who progressed between primary, secondary or tertiary education.

What would have happened if children who changed schools instead continued to attend the same school? Figure 4.18 shows that across all PPRs, the majority of children (who changed schools) would have had a longer commute if they had remained in their previous schools. This may have been a factor why some of the children had decided to change schools.

Figure 4.18: Percentage of children who changed schools where 'pre-PPR school from PPR' distance is further than 'post-PPR school from PPR' distance



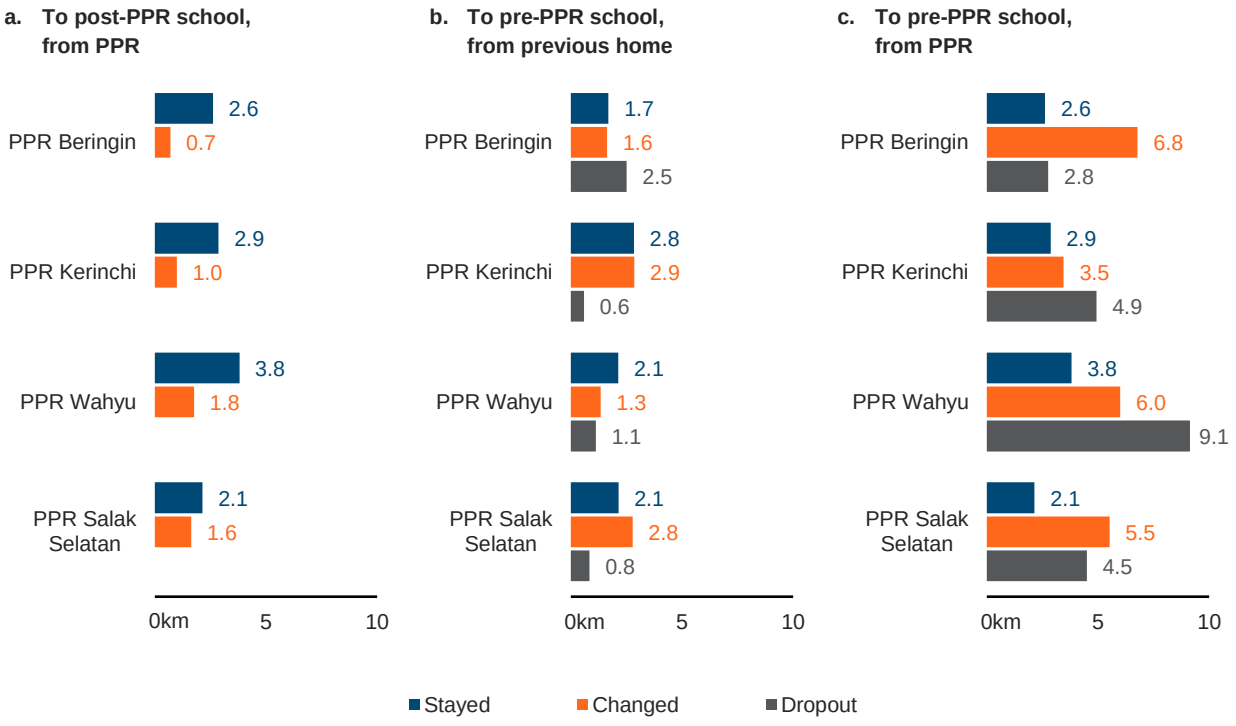
Note: This excludes 1) children who did not attend school before but started schooling after moving to the PPRs, 2) children who did not attend schooling before and after moving, 3) children whose schools could not be geoclassified due to missing or unspecified data, 4) children who progressed between primary, secondary or tertiary education.

Nevertheless, it is also worth seeing the actual distances between the different groups of children, as the differences in distances may not actually have been all that substantial. Figure 4.19a illustrates the median distances to school from children's respective PPRs to the schools they attended after relocating to the PPR. A notable observation is that the median distances to school were higher for children who did not change schools than for children who changed schools, across all PPRs.

How does this compare with their previous experiences? Figure 4.19a and 4.19b shows the median distances from the previous homes of children to the schools that they attended before relocating. Comparing Figure 4.19a and 4.19b, the post-relocation median distances were lower than before for children who changed schools. This is true for all PPRs except PPR Wahyu, where the median distance increased from 1.3km to 1.8km. Meanwhile, for children who did not change schools, the median distances after relocation were higher than before. This is in line with the earlier finding that most children who stayed in their old schools saw an increase in their commute to school. The only exception is for children from PPR Salak Selatan, where the median distance before and after is the same at 2.1km, while for those from PPR Kerinchi it is also about the same, at 2.8 to 2.9km.

What if children who changed schools after relocating to the PPRs decided not to change? Looking at Figure 4.19c, the median distances would have been far greater than the distances they instead saw after changing schools, shown in Figure 4.19a. This is most drastic for those from PPR Beringin, where the median distance would have been 6.8km, compared to the 0.7km they instead saw after changing schools. This further corroborates our hypothesis that most children who changed schools were compelled to by the otherwise longer trip to school if they did not change schools. Looking at those who dropped out of school, the median distance to their previous schools from the PPRs is drastic only for those from PPR Kerinchi and PPR Wahyu, at 4.9km and 9.1km, which may have dissuaded them from continuing with their schooling after moving. However, for those from the other PPRs, the median distance is about the same for dropouts as those who did not change schools, which suggests that these children may have dropped out for other reasons.

Figure 4.19: Median distance to schools (km)



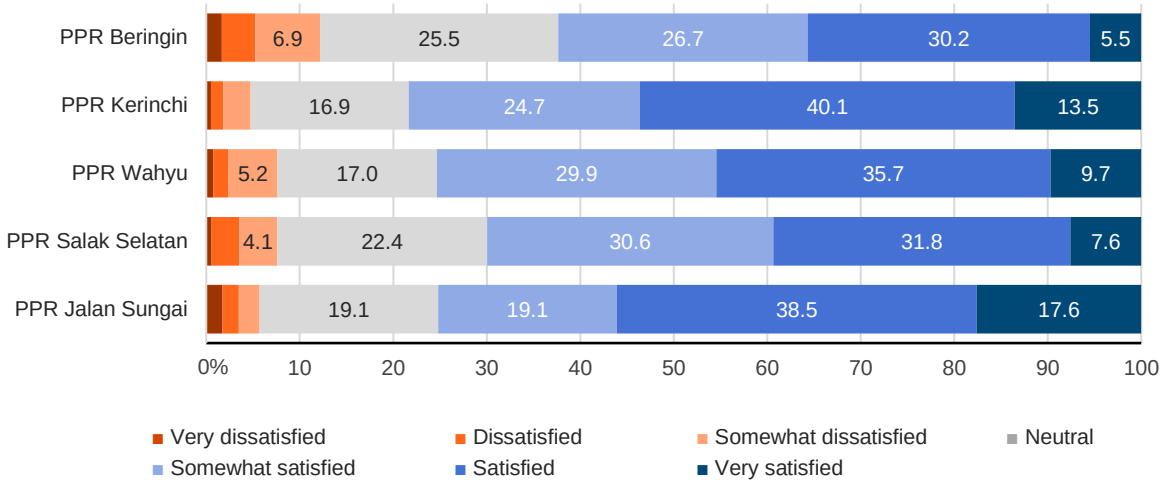
Note: This excludes 1) children who did not attend school before but started schooling after moving to the PPRs, 2) children who did not attend schooling before and after moving, 3) children whose schools could not be geoclassified due to missing or unspecified data, 4) children who progressed between primary, secondary or tertiary education.

4.3 Locational Satisfaction

4.3.1. Are PPR residents satisfied with their location?

As stated earlier in this chapter, locational characteristics are arguably among the core components of housing satisfaction. When asked about how satisfied the PPR residents were with the location of their complex, most responded positively. The most common response was "satisfied" while only a very small percentage expressed any level of dissatisfaction (Figure 4.20). PPR Beringin had the highest percentage of respondents who reported any level of dissatisfaction, at 12.2% while PPR Kerinchi had the lowest at 4.7%.

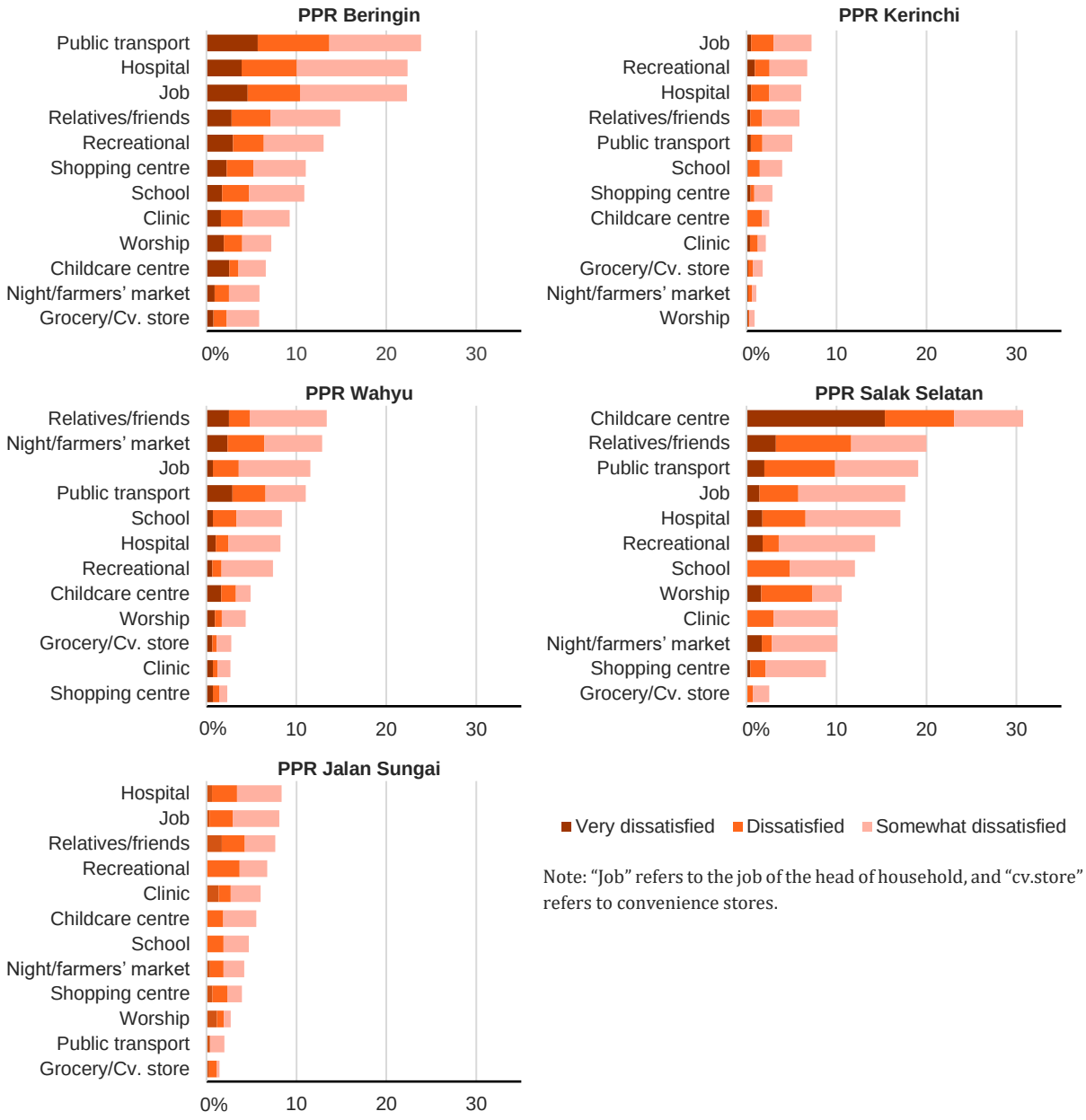
Figure 4.20: Percentage of respondents by satisfaction with overall location satisfaction, by PPR



This high level of locational satisfaction was also true with respect to individual places, with most respondents reporting "satisfied" in their access to these places. However, certain places consistently had the highest proportion of respondents reporting a level of dissatisfaction (Figure 4.21). In particular, access to jobs ranked in the top five for all PPRs, as well as access to the homes of relatives and friends. Meanwhile, access to hospitals and public transport ranked in the top five in all but one PPR for dissatisfaction at any level. PPR Wahyu was the only one where access to schools and night/farmers' markets appeared in the top five, while PPR Salak Selatan was the only PPR where access to childcare centres ranked in the top five, where it was also the top one complaint. Finally, PPR Jalan Sungai was the only PPR where access to clinics appeared in the top five.

Nevertheless, comparing the total level of dissatisfaction between PPRs, more from PPR Salak Selatan and PPR Beringin appeared to be dissatisfied, with a considerable number of places having had more than 10% of respondents reporting any form of dissatisfaction. For PPR Salak Selatan, access to childcare centres appeared to be a highly pressing concern, with nearly a third of respondents expressing dissatisfaction, considerably more than the second ranked place. For PPR Beringin, access to public transport, hospitals and jobs rank in the top three and shared a similar percentage of respondents reporting dissatisfaction at above 20% each.

Figure 4.21: Percentage of respondents dissatisfied with distance to particular places, by PPR



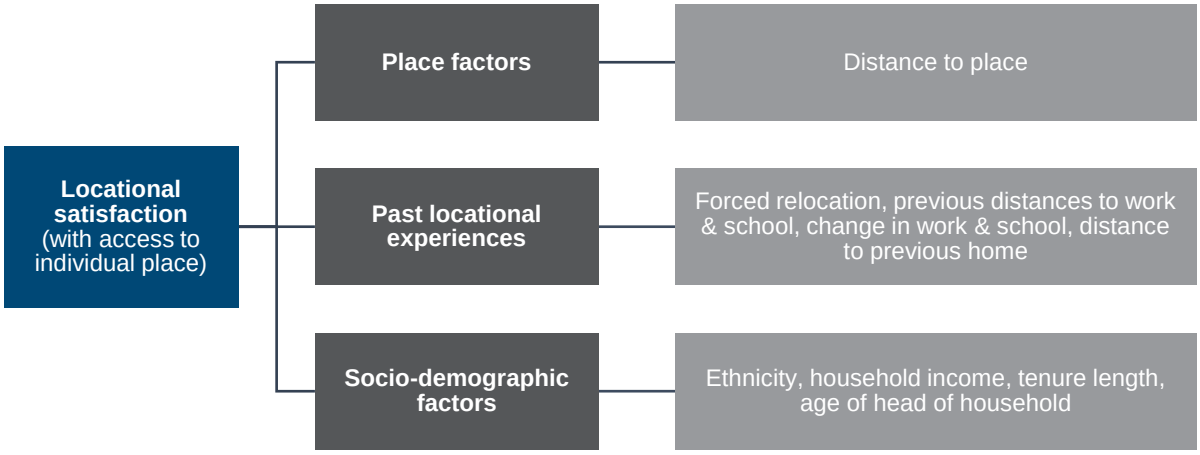
Note: "Job" refers to the job of the head of household, and "cv.store" refers to convenience stores.

4.3.2. Explaining satisfaction: How much does distance influence satisfaction?

Given that the accessibility to places of interest by PPR citizens were viewed reasonably it is unsurprising that there was an acceptable level of locational satisfaction. This is tested further by means of econometric modelling to estimate how distances matter in determining one's satisfaction with accessibility to places, once other factors are controlled for[160]. These controls include factors that may influence preferences, such as past locational experiences as well as individual and household socio-economic characteristics. Figure 4.22 illustrates the conceptual framework of this model.

[160] For full results and description of the model, refer to Appendix F.

Figure 4.22: Conceptual framework of explaining locational satisfaction



The results of the exercise suggest that distances matter in shaping locational satisfaction. Given the statistically significant relationship, an increase in distance is associated with a decrease in satisfaction. The extent to which an increase in distance correlates with a decrease in satisfaction is greatest for access to homes of relatives and friends, followed by jobs and hospitals.

Meanwhile, distance does not appear to be associated with satisfaction for certain places in either all or certain model specifications that were conducted as a robustness check. This was for recreational places and schools[161].

In terms of past locational experiences, its relationship with satisfaction is less convincing. For jobs and schooling in particular, previous distances from prior homes (before moving to the PPR) were not associated with satisfaction at a statistically significant level, no matter the model specification.

What about whether there was a change in jobs or schools after relocating to the PPRs, especially given that a high number of head of households had changed their jobs? However, based on the model, no relationship with locational satisfaction is found at a statistically significant level. This suggests that any changes in jobs or schools were not necessarily a negative outcome.

Meanwhile, the effect of displacement and how far one relocated from (i.e. the distance between their PPR and previous home) on locational satisfaction is more ambiguous. The results show that if one was ordered to move to make way for development, it correlated with a decrease in satisfaction with access to a few places. Namely, these are clinics, hospitals, grocery stores, shopping centres and public transport stations, and not jobs and schools. However, in other model specifications, the relationship with satisfaction with access to all places were insignificant. Likewise, the relationship with how far one relocated from is negatively associated with satisfaction for certain places (this time including jobs but a lower significance level), but in other model specifications, the relationship is insignificant.

[161] The main specifications were estimated using OLS while one specification was used an ordinal logistic regression.

Tying these findings on variables relating to past locational experiences, the conclusion is that the relationship with locational satisfaction is unconvincing. This suggests that most of the PPR residents in the case study are generally satisfied regardless of their past locational experiences.

In terms of individual and household socio-economic characteristics that may affect locational preferences and thus satisfaction, the factors that were tested were ethnicity, the age of the head of household; household income; whether the household owns the unit; and whether or not the respondent was the head of household. However, the results show that these factors are only associated with satisfaction for certain locations. Their effect sizes are also small, being statistically significant but not necessarily practically significant, as well as less convincing after being absent in other model specifications. An exception is ethnicity, where Indian households are consistently less satisfied with access to places of worship and schools, as well as possibly (given the absence of significance in one of the model specifications) jobs. This suggests that these places that serve their needs may be more lacking in access, which will be an important area to address in achieving a more equal and equitable society.

4.4 Conclusion and Policy Implications

The findings indicate that accessibility to key amenities was generally amicable due to the short median distances for employment, schooling, daily needs and leisure. This is a positive finding considering the context of high-density capital cities of Kuala Lumpur and George Town where the high costs of real estate would have bid-out homes in central locations for the poor.

The findings also suggest insignificant disruption to employment and schooling from the process of relocation to the PPRs. While there was a significant number of household heads who changed their jobs since relocating, this is more to reflect workers working more years and progressing through their careers, as most had longer period of residence (tenures) in the PPRs. Among those with shorter tenures, job changes were less prominent. The fact that most households did not have to relocate far from their previous homes was the likely factor that limited the need to change jobs.

Nevertheless, those who changed jobs worked closer to home than those who continued to work at their pre-relocation jobs. Had they not changed their jobs, the distances to be traversed would be in fact on par, or even less, than the median distances. This suggests that household heads were not "forced" to change jobs as the distances travelled would not have been all that unmanageable for them to continuing working there. Instead, the changes in jobs may be due to other factors. A positive possibility is that it reflected household heads exercising their choice and preference to work closer to their homes, and the job opportunities surrounding the PPRs enabled them to do so.

In terms of schooling, the majority of children continue to learn in their old schools without having to endure an excessive increase in their commute. Meanwhile, those who changed schools were likely compelled to by otherwise much longer commutes. This was likely tied to how far they relocated from, as those who moved from farther away had a greater propensity to change schools. Nevertheless, a positive outcome for those who changed schools was that the new schools were much closer to their homes, more so than before and more so than the children who did not change schools.

Concurrently, the prevailing positive locational attributes of the PPRs correspond with the locational satisfaction of residents that was generally positive. Based on econometric modelling, lower distances to jobs, schooling and key amenities facilitated higher locational satisfaction among residents. Higher distances that had to be traversed by a small minority of residents was associated with lower satisfaction levels. Nevertheless, the locational satisfaction of residents appeared consistent regardless of past locational experiences such as how far previous commutes were to work and school, and whether there was a change in jobs or schooling. This suggests that the relocation process was not disruptive to employment and schooling, and any change were not necessarily a negative outcome.

While these findings are generally positive, there are a few caveats. First, all the PPRs in the case study are situated relatively near to city centres, and thus it is perhaps not surprising that accessibility is good and residents are satisfied. It might not be the case for residents who relocated to PPRs at less urbanised areas or peri-urban areas of cities. Second, another important locational aspect of social housing policies is to consider the impact of segregating the poor in dense complexes or neighbourhoods. Though the study did not explore the effects of this phenomenon, it is likely that this poses social concerns for residents especially if it is an outcome that is worse-off than compared to their prior conditions. Examples of the negative effects of the 'segregation of the poor' has prompted a policy shift in other countries to disperse low-income households across mixed-income neighbourhoods[162].

The main policy implications therefore are as follows:

1. To continue ensuring appropriate employment opportunities, schools and amenities within and near the vicinity of PPRs.
2. To continue prioritising relocation of vulnerable and displaced communities to nearby areas or other areas that minimise disruption to the employment and schooling of residents.

[162] Oakley and Burchfield (2009)

CHAPTER 05

CHAPTER 5

SOCIAL HOUSING EXIT POLICIES: A CASE OF `NO WHERE TO GO'?

5.1 Introduction

In general terms, the PPR program accommodates the housing needs of the poor who are unable to obtain housing through other means. However, should PPR programs be a 'permanent' method of providing shelter for the poor? Or should it be a transitionary program that provides an avenue for residents with the view that once they achieve a sufficient level of income they should move elsewhere? And what should be the graduation criteria i.e. appropriate income level for exiting social housing programmes? Should it depend on the rental rates in the private sector, or is there an 'absolute' income that renders poor households no longer 'poor'?

In order to devise policy options to the above questions, this chapter considers empirically, whether PPR residents have viable options in the private market to graduate. It begins with a summary on the metrics of affordability for both ownership and rental, and subsequently examines the available options in private housing markets for eligible or 'graduating' PPR residents. This chapter also discusses an approach that assists with the migration of prospective social housing graduates to the private sector's rental or ownership schemes, taking into account the size of households rather than just the income level of households, as well as the general standard of living attained.

5.2 A Summary of Affordability Metrics

Housing affordability is a concept that is affected by various situational factors such as house prices, household incomes, cost of living and various other intersecting factors. Table 5.1 summarizes a broad range of housing affordability metrics based on a literature review of the definitions of housing affordability.

Table 5.1: Summary of the housing affordability definitions

Definitions	Metrics
1. Rule of Thumb	Housing is affordable if: 1. **housing expenditure is no more than 30% of a household's income**. 2. the **rent-to-income (RTI) ratio is between 20 – 25%** of household income. 3. the **median multiple is 3.0x** annual median household income.
2. Housing Accessibility	This definition is specially developed for measuring a would-be homeowner's accessibility to homeownership. A would-be homeowner is accessible to homeownership if he/she **has enough funds to pay down payment and closing costs requirements**.
3. Housing Mismatch	This definition provides a macro measurement for housing affordability. Housing is affordable if the **supply of affordable housing units meets the demand** for it.
4. No Burden	Housing is affordable if a household has a **sufficient amount of non-housing expenditure in addition to housing expenditure**.
5. Quality Adjusted Measurement	This definition is specially developed to measure low-income households' affordability for government-subsidized housing. The definition accounts for changes in housing quality by using the price of the lowest cost unit that **meets the minimum adequacy standard**.

Source: Adapted from Yuen, Kwee, and Tu (2006), KRI (2015), and Ling and Almeida (2016)

The UN-Habitat broadly defines affordable housing as "that which is adequate in quality and location and does not cost so much that it prohibits occupants from meeting other basic living costs or threatens their employment of basic human rights…"[163]. Figure 5.1 simplifies the various definitions of housing affordability as represented by the 'cost to buy the house' and the 'cost to keep the house'.

The many definitions and metrics of housing affordability arise from the multidimensional nature of affordable housing. For example, Definition 1 (Rule of Thumb) considers housing to be affordable if housing expenditure is no more than 30% of a household's income. This is largely a statistical view of housing expenditure. Some variants of Definition 1 include UN-Habitat's RTI ratio, whereby housing is considered affordable if households' housing or rental expenditure is between 20 – 25% of their household income.

On the other hand, Definitions 2, 3 and 4 are based on economic and livelihood considerations. Under these definitions, housing is considered affordable if prospective homeowners are able to meet their down payments and closing cost requirements (Definition 2 regarding 'housing accessibility'), if there is ample supply of affordable housing options to meet demand (Definition 3 regarding 'housing mismatch'), and if households exhibit ample non-housing expenditure on top of housing expenditure (Definition 4 regarding the burden of housing expenditure).

Figure 5.1: Basic components of financial affordability of housing

Source: UN-Habitat (2011), KRI (2015), Ling and Almeida (2016), and Menon et al. (2019)

These measures are useful in diagnosing affordability as faced by different segments of society. Based on these definitions, the following measures can be employed by the relevant authorities to gauge the severity of housing affordability and to describe what options are available for PPR tenants who are due to 'graduate' from social housing.

[163] UN-Habitat (2011)

5.2.1. Median Multiple as an indicator of affordability for Malaysia's housing market

We note that because the Housing Cost Burden (HCB) and Residual Income (RI) account for the role of financing and household expenditure, these measurements of housing affordability are susceptible to adjustments in factors or policies related to housing finance such as loan tenure, the deposit rate, or effective interest rate. As such these two measures relate more to the role of finance in relation to the household's ability to service loans as opposed to whether houses are too expensive for a given income distribution.

However, the median multiple (MM) does not consider the role of finance when quantifying housing affordability[164]. In fact, based on a simulation exercise, a median multiple of 3x in the Malaysian housing market seems to produce the best fit of housing supply for Malaysian household income distribution[165]. This suggests that the 3.0x median multiple could be used as an indicator of affordability for Malaysia's housing market.

Figure 5.2: Common measures of housing affordability

MM	**MEDIAN MULTIPLE** Median house price of 3x or less than the median annual household income • Easy to calculate • Cross country comparison over time is possible • Excludes the role of finance
HCB	**HOUSING COST BURDEN** Housing expenditure that is less than 30% of household income • Accounts for the role of finance and non-housing expenditure of households • Cross country comparison is possible but may be affected by differences in cost of living and financial systems
RI	**RESIDUAL INCOME** Residual income that is sufficient to service monthly mortgage obligations • Accounts for the role of finance and the household's spending patterns • Requires detailed data on household income, expenditures and housing costs • Limited cross-country comparability

Source: Suraya Ismail et al. (2019)

Relevant authorities may employ the median multiple indicator to estimate the affordable housing options in the private market that is accessible for prospective social housing graduates. Additionally, relevant authorities can also use the indicator to locate these viable options within a close vicinity to assist with the transition of social housing graduates without displacing them from their socio-economic ecosystem.

[164] Suraya Ismail et al. (2019)
[165] KRI (2015)

5.2.2. Renter affordability measures

Section 5.2.1 outlines the use case of the median multiple as an indicator to assist households who are eligible and enable to afford home ownership. However, in Building an Enabling Policy Framework (see the Introduction chapter), there will be households who will continue to be in the social sector and other households who are eligible to graduate from social housing but cannot afford a conventional mortgage arrangement. This segment describes various rent affordability measures for both the social and private sectors, as demonstrated in Table 5.2.

Table 5.2: Renter affordability measures

Measure	Definition	Data Used
Ability to afford private renting	Affordable if rent payable is up to 25% of their gross household income.	Rent payable Gross household income
Affordability of social housing	To compare average cost of social housing rent for local authorities & 10th percentile gross salary.	Cost of social housing rent 10th percentile gross salary
Residual incomes	Measures income a household has left over after they have paid housing costs. Residual income = income - rent - income support applicable amount + housing benefit	Household income Rental payment Income support Housing benefit
Rent Ratio (compare both renting and buying)	Purchase price of a house divided by annual rent of a similar home.	House price Annual rental payment
Housing wage approach	The rent of a standard, modest quality rental with either one or two bedrooms in an area is compared to the multiples of full-time minimum wage work it would take to afford (at 30% of income) that apartment.	Rental payment Full time minimum wage work

Source: Suraya Ismail et al. (2019)

UN-Habitat's RTI ratio suggests that households' housing or rental expenditure throughout the world follows some stylized facts[166]. Based on this, an affordable rental range for the private sector ought to be between 20 – 25% of household income.

A household that is forced to deviate above and away from the standard RTI ratio spends more as a percentage of total expenditure than the average household. On the other hand, a deviation below this range represents a smaller proportion in housing expenditure as compared to an average household.

Similarly, the RTI ratio can be used as a measure of rent affordability in the private market for prospective social housing graduates. For context, the average Malaysian housing expenditure (rental only) accounts for 17.9% of total household expenditure[167] as of 2019, a percentage slightly below the UN-Habitat's recommendation.

[166] Jr (2019)
[167] DOS (2020a)

5.3 The Living Rent Approach—A Basis for Rent Determination

In order to craft a viable exit policy for prospective social housing graduates, relevant authorities must have an estimate of their living rent. 'Living Rent', in its simplest form, represents the level of rent that is affordable for households given the following considerations:

1. A minimum standard of living (as sometimes represented by minimum wage)
2. Number of dependencies in household (as represented by size of household).

Following Savills (2015), this subsection discusses some livelihood considerations in determining the level of rent that can be levied on households categorized as in need of social housing. In 2020, the minimum wage[168] in Malaysia for an individual who is employed in any city council or municipal council was RM1,200 per month[169]. However, the current PPR application eligibility criteria requires that one's household be earning less than RM3,000 per month. This criterion is the same regardless of household size or the presence of multiple income earners per household.

5.3.1. The use of equivalence scales

The first step of our proposition begins with developing a means through which households of different sizes may be evaluated based on their standard of living. In order to adjust for differences in standard of living, household income and expenditure should be equivalized. While there are many models of equivalence, an earlier KRI study[170] developed equivalence scales as derived in Table 5.3 and Table 5.4[171]. However, the most direct and simple model is the square root scale, as illustrated in Table 5.5.

To visualise the magnitude of the problem when household size is not accounted for, consider the following examples of different household typologies, holding income and size of PPR unit constant:

- PPR unit 01 is occupied by a single person household who enjoys 650sqft of space, and two bedrooms[172] to spare.
- PPR unit 02 is occupied by a couple who has the same allocation of space as PPR unit 01.
- PPR unit 03 is occupied by a couple with three children. Over time as their children become adults, they still sleep in the same bedroom despite being of different genders.

It is clear from the comparison that even though all households earn the same income and pay the same rent of RM124 for their PPR units, their standard of living could be very different as resources (both monetary and housing environment) need to be shared among more household members in larger sized households.

[168] In 2022, the minimum wage was revised to RM1,500. However, for the purpose of this analysis, the authors decided to use the previous minimum wage of RM1,200 as it is found to be more suitable considering the timeline of survey commencement and the collection of household income data during the period of 2016 – 2017.
[169] Attorney General's Chambers (2020)
[170] Hawati Abdul Hamid, Ho, and Suraya Ismail (2019)
[171] Hawati Abdul Hamid, Ho, and Suraya Ismail (2019)
[172] PPR units have three bedrooms, but the size of the third room is small (71sqft) and it is thus more suited to be a storeroom, utility room or a study room, rather than a bedroom.

Table 5.3: Equivalent scale elasticity and household size, 2014

Household size	Gross income	KRI-estimated scale	OECD-modified scale	Square root scale	Per capita income
1 (Reference)	0.00	0.00	0.00	0.50	1.00
2		0.67	0.58	0.50	
3		0.64	0.58	0.50	
4		0.62	0.59	0.50	
5		0.62	0.59	0.50	
6		0.63	0.61	0.50	
Average	**1.00**	**0.63**	**0.59**	**0.50**	**0.00**

Source: Hawati Abdul Hamid, Ho, and Suraya Ismail (2019)

Table 5.4: Summary of adult equivalent scale factors, 2014

	Food (Overall)	Necessity bundle (Overall)
Reference household = 1 adult	1.00	1.00
Additional adults		
1 additional adult	0.82	0.61
2 additional adults	1.50	0.96
3 additional adults	2.04	1.11
4 additional adults	2.46	1.12
5 additional adults	2.79	1.06
Children aged 6 years and below		
1 additional child	0.78	0.56
2 additional children	1.37	0.83
3 additional children	1.81	0.91
4 additional children	2.13	0.87
5 additional children	2.34	0.75
Children aged 7 – 12 years old		
1 additional child	0.77	0.64
2 additional children	1.34	1.02
3 additional children	1.75	1.21
4 additional children	2.04	1.26
5 additional children	2.22	1.23
Children aged 13 – 17 years old		
1 additional child	0.75	0.59
2 additional children	1.29	0.90
3 additional children	1.67	1.02
4 additional children	1.92	1.01
5 additional children	2.07	0.92

Source: Hawati Abdul Hamid, Ho, and Suraya Ismail (2019)

5.3.2. The metrics for standard of living

In Malaysia, the minimum wage for an individual worker in 2020 corresponded to the PLI for a household of 4 individuals. The PLI is an estimate of the amount of money required to have enough food and fulfil basic needs[173].

[173] A more elaborate discussion on PLI and other metrics of poverty is addressed in Hawati Abdul Hamid, Ho, and Suraya Ismail (2019).

In attempting to ascertain standards of living, a number of recent studies have offered different perspectives on the financial requirements of a household, to either satisfy basic needs or maintain a decent standard of living. Chong and Khong (2017) calculated the living wage (a wage required to sustain a decent standard of living) at approximately RM2,700 per single person household, RM4,700 for a couple and RM6,500 for a couple with 2 children. Similarly, KRI's study[174] calculated that households which exhibit 'aspirational consumption'[175] earned RM3,000 for a single person household, RM4,850 for a couple and RM8,320 for a couple with two children. However, the same study also indicated that households who earned below RM1,200 (single person household), RM1,930 (a couple) or RM3,300 (a couple with 2 children) were merely fulfilling basic needs, as of 2019.

5.3.3. Living rent use case: Basic needs threshold

Our findings indicate that between 70% to 75% of PPR units are occupied by households of between 3 to 6 individuals (Figure 2.13). Using the basic needs criterion of RM1,200 for a single household as a starting point, we scale this threshold by household size. Table 5.5 presents household incomes for different household sizes, while holding standard of living (basic needs threshold) constant:

Table 5.5: Basic needs threshold by household size

Household Size	Basic Needs		PLI 2019	
	KRI Scale	Square Root Scale	KRI Scale	Square Root Scale
1	RM1,200	RM1,200	RM1,118	RM1,118
2	1,932	1,697	1,800	1,581
3	2,352	2,078	2,191	1,937
4	2,532	2,400	2,359	2,236
5 and above	2,544	2,683	2,370	2,500

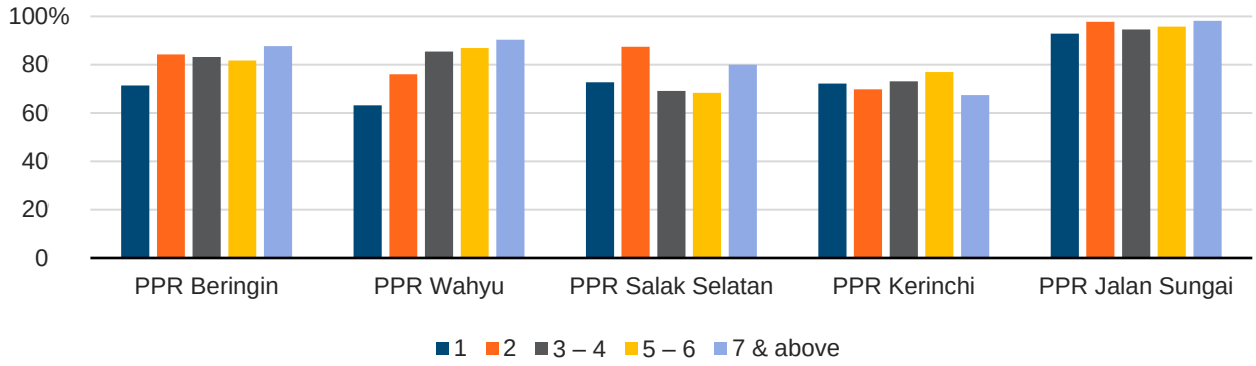
Note:
1. The KRI scale is obtained via regression using the Working-Lesser model. For example, the equivalence scale factor for two adults is 1.61 (refer to Table 5.4). To calculate the basic needs threshold for a household size of two, multiply the equivalence scale factor with the minimum wage of RM1,200 to obtain RM1,932. For the purpose of this analysis, the authors decided to use the previous minimum wage of RM1,200 as it is more suitable given that collection of PPR households' income data during the period of 2016 – 2017.
2. The square root scale is a means to equivalized income where there is lack of data or research. For example, the average PLI for a household size of 3.9 is RM2,208. To calculate the threshold for a single adult, divide the average PLI value by the square root of 3.9 to obtain RM1,118. For a household of two, take the square root of 2 and multiply with RM1,118 to obtain the threshold of RM1,581.
3. The basic needs threshold displayed here should be interpreted with caution as the calculation assumes that all households consist of adults. Hence, the thresholds will differ slightly after accounting for children of various age groups, as demonstrated in Table 5.4.
4. Both the minimum wage and PLI were used to compute the basic needs threshold as to assist the local authorities to employ the suitable method depending on locality i.e. the urban or rural context. Minimum wage will be suitable in most urban areas whereas PLI might be suitable for households living in rural areas.

Source: Hawati Abdul Hamid, Ho, and Suraya Ismail (2019) and KRI calculations

[174] Hawati Abdul Hamid, Ho, and Suraya Ismail (2019)
[175] Aspirational consumption is the ability to exhibit discretionary consumption in the way where the households are not constrained to spend and have the ability to maintain or invest further for their own upward social mobility and insulating themselves from adverse events.

By employing equivalence scales, it is possible to compare the standards of living for households of different sizes. For example, a single person household earning RM1,200 has roughly the same standard of living as a household of two individuals earning household income of RM1,932. After the incomes of each household are equivalized, the next step identifies the proportion of PPR households that were merely satisfying basic needs, and the proportion of PPR households that were living above this income level. Figure 5.3 describes these proportions for the 5 surveyed PPRs:

Figure 5.3: Proportion of PPR households satisfying basic needs, by household size



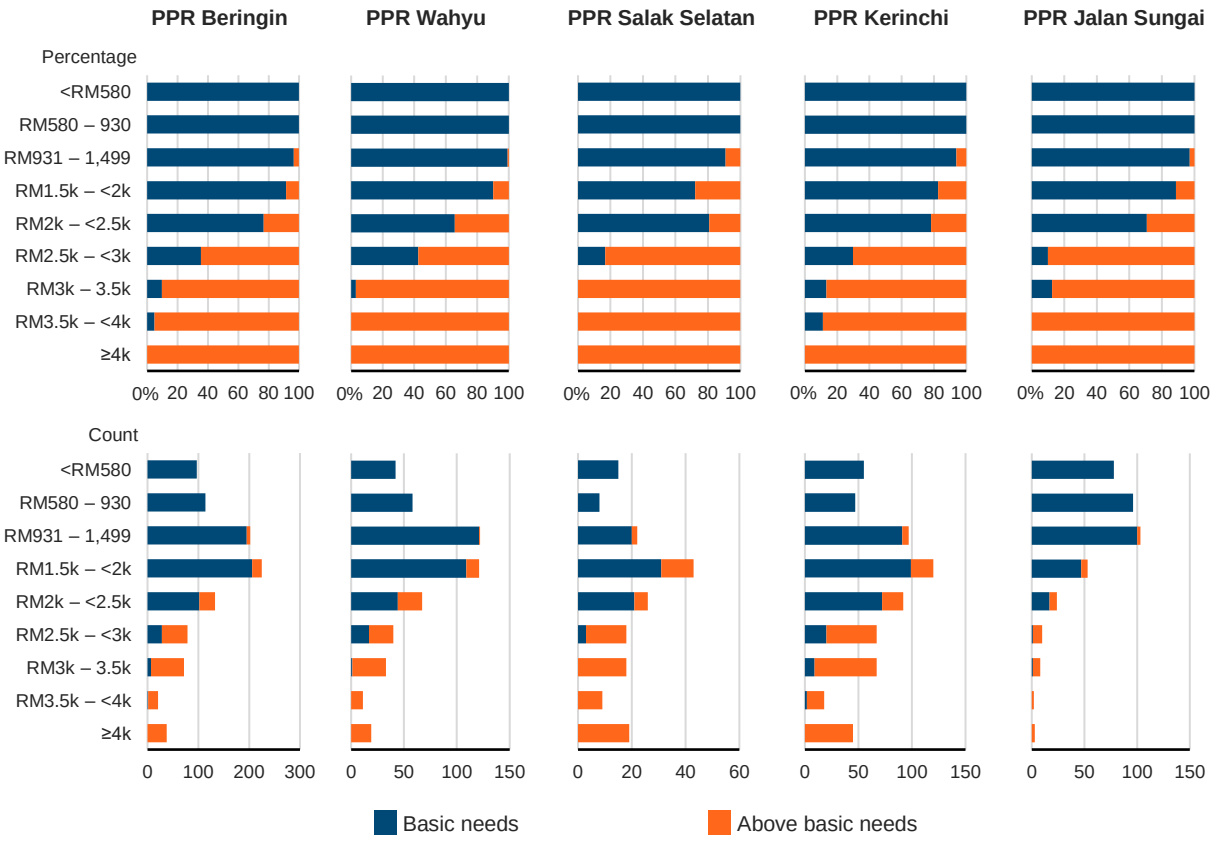
A few observations arise from this exercise. Firstly, it could be seen that across all PPRs, more than 60% of households were merely satisfying basic needs. This is not entirely surprising as PPRs represent the delivery of social housing to the proportion of society which needs it the most.

Even more than PPRs in Kuala Lumpur, more than 90% of households in PPR Jalan Sungai fit into this category. The fact that this proportion is roughly the same across household sizes in PPR Jalan Sungai suggests that the Penang Government has an effective mechanism of targeting and delivering PPR units to people which need them the most. Indeed, a higher percentage of PPR tenants currently occupying the PPR Jalan Sungai (44.4%) were not ordered to relocate but cited other reasons, including financial constraints, for living in PPRs.

Finally, for most PPRs, the proportion of single person households in this category is slightly lower compared to households of other sizes, except for PPR Salak Selatan. This is likely a feature of the RM3,000 eligibility criterion that does not take household size into consideration.

Figure 5.4 describes the proportion of households satisfying basic needs by income brackets. It is observed that most households with incomes below RM2,500 were classified as merely satisfying basic needs according to an earlier KRI report[176]. This proportion appears to be relatively consistent throughout all the surveyed PPRs.

Figure 5.4: PPR households satisfying basic needs, by household income



Relevant authorities may employ different considerations in determining living rent. For example, instead of using the minimum wage or basic needs as employed in this subsection, relevant authorities might use a higher benchmark of standard of living i.e. the living wage. However, various factors ought to be considered in order to develop a graduation criterion that is robust and enabling, as there are various locational heterogeneities which manifest across PPRs in different locations.

[176] Hawati Abdul Hamid, Ho, and Suraya Ismail (2019)

5.4 Is there a Case of 'Nowhere to Go' for PPR Residents?

Before going into the details of PPR residents' options and constraints in 'graduating' from social housing, this section establishes some background information that is important to contextualize the discussion.

First, as shown in Figure 2.11, an average of 70% of PPR residents in Kuala Lumpur were ordered to relocate due to redevelopment purposes. Therefore, the filtration process may not be based on the income criteria[177]. Second, the relocation of these households into PPR units mostly occurred within 5.0 km of their previous location. In fact, based on Figure 2.21, most residents maintained their jobs (excluding retirees, and new job seekers) even after moving into the PPR complexes.

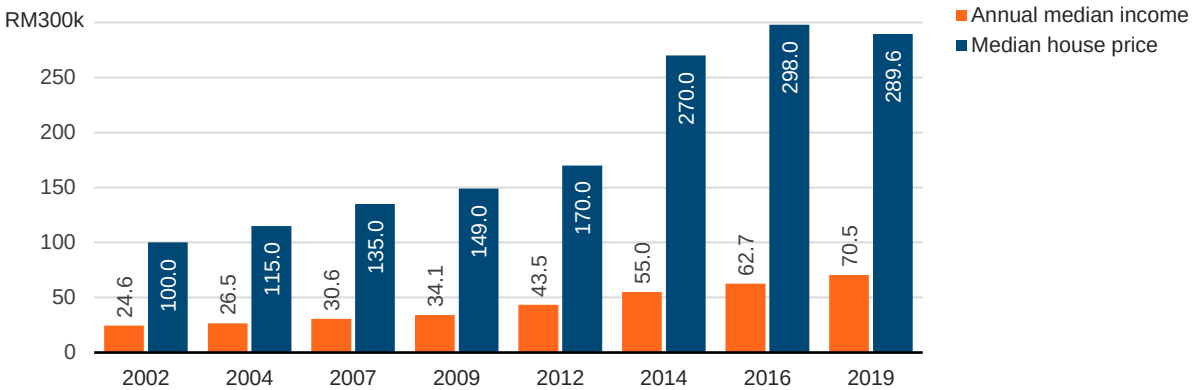
Third, PPR residents' socio-economic ecosystem were concentrated mostly in places and amenities situated within close vicinity of the complex. Further, it can be observed that PPR residents frequently visit nearby *pasar malam* or *pasar tani* to acquire their daily needs. These residents also frequently visit local mosques or other religious buildings nearby to perform their religious obligations.

This indicates that the surrounding spatial ecosystem of the PPR complexes are well interconnected with infrastructures and facilities integral to the lives of the PPR residents. In considering the options available for PPR residents to move on from social housing, it is crucial that residents are not displaced away from their existing socio-economic ecosystem, so that they enjoy the same level of accessibility and positive living environment within their new ecosystem.

Lastly, the rental amount of RM124 for a PPR unit has remained the same since 1998[178]. However, house prices have escalated rapidly between 2009 – 2019, (Figure 5.5). In the year 2002, the median house price was RM100,000. This value grew to RM289,646 in 2019[179] (CAGR: 6.26%). In the same period, B40 mean incomes rose from an average of RM1,414 to RM3,152 (CAGR: 4.72%). As the rental market tracks house prices over time, it is clear that unless PPR residents' benefit from a sharp increase in income above 6.26%, they would find it increasingly difficult to find options outside of social housing.

[177] PPR Jalan Sungai (Pulau Pinang) did not have tenants that moved due to relocation orders.
[178] Syafiee Shuid (2016)
[179] NAPIC (n.d.)

Figure 5.5: Household income versus house prices, 2002 – 2019 (RM)



Inter-period CAGR (%)

	2004	2007	2009	2012	2014	2016	2019	
-	3.8	4.8	5.4	8.1	11.7	6.6	3.9	Median Income
	7.0	5.3	4.9	4.4	23.1	4.9	-0.9	Median House Price

Source: Suraya Ismail et al. (2019), DOS (2020a) and KRI calculations

Under these circumstances, the analysis begins by identifying potential PPR tenants that may exit the social housing program. These refer to tenants who are no longer living under basic needs[180]. Table 5.6 shows the breakdown of the number of PPR renters by household income range and basic needs.

Table 5.6: Number of PPR renters by household income

Household income	PPR Beringin		PPR Kerinchi		PPR Wahyu		PPR Salak Selatan		PPR Jalan Sungai	
	Satisfy basic needs	Above basic needs	Satisfy basic needs	Above basic needs	Satisfy basic needs	Above basic needs	Satisfy basic needs	Above basic needs	Satisfy basic needs	Above basic needs
<RM580	97	0	55	0	42	0	15	0	78	0
RM580 – 930	114	0	47	0	58	0	8	0	96	0
RM931 – <1.5k	195	7	91	6	121	1	20	2	100	3
RM1.5k – <2k	206	19	99	21	109	12	31	12	47	6
RM2k – <2.5k	102	31	72	20	44	23	21	5	17	7
RM2.5k – <3k	28	51	20	47	17	23	3	15	1	9
RM3k – <3.5k	7	65	9	58	1	32	0	18	1	7
RM3.5k – <4k	1	20	2	16	0	11	0	9	0	2
RM4k & above	0	38	0	45	0	19	0	19	0	3

Note: Owners are excluded from this analysis. The basic needs threshold also corresponds with the previous minimum wage of RM1,200.

It could be seen that approximately 26% of tenants enjoy a standard of living above the basic needs' threshold and might potentially be financially prepared to graduate from social housing and move up the housing ladder, provided that there is a viable option.

[180] See Figure 5.4. But depending on local context, relevant authorities should incorporate more considerations in appropriating the most suitable standard of living.

However, a market rental study conducted by the National Valuation Institute (INSPEN)[181] shows that there are potential tenants currently situated in private housing schemes who fall within the PPR qualifying criteria and are eligible for PPR housing programmes. Table 5.7 shows the income of respondents who participated in the market rental survey. Interestingly, more than half of the respondents outside PPR complexes have household incomes below RM3,000. While the general preferences and conditions of these households residing outside PPR complexes are not known, a comparison of both survey findings by KRI and INSPEN suggest that there is a possibility that financially struggling households outside the PPR stand a chance of migrating into PPRs should qualified PPR tenants (26%) progress from social housing.

Table 5.7: Income of respondents in private housing schemes nearby PPRs

Household income range	Count	Percentage
<RM580	177	8.6%
RM580 – 930	28	1.4
RM931 – <1.5k	79	3.8
RM1.5k – <2k	210	10.2
RM2k – <2.5k	382	18.6
RM2.5k – <3k	176	8.6
RM3k – <3.5k	270	13.2
RM3.5k – <4k	146	7.1
RM4k & above	584	28.5

Source: INSPEN (2019)

5.4.1. Alternative rental options in the private housing market

INSPEN's market rental study provides insight into the options available for PPR residents. The valuation agency conducted a rental survey in private housing schemes available near the 5 PPR complexes in our study. Table 5.8 details the number of alternative private housing schemes which offer a monthly rental rate of less than RM500, keeping in mind the present PPR rental rate of RM124.

Table 5.8: Number of alternative private rental housing schemes at RM500 per month and less, by distance to PPR

	<2km	2.1 – 5 km	5.1 – 8 km	8.1 – 10km	>10.1km	TOTAL
PPR Beringin & PPR Wahyu	1	1	1	0	0	**3**
PPR Kerinchi	0	0	0	0	0	**0**
PPR Salak Selatan	0	0	0	1	0	**1**
PPR Jalan Sungai	11	2	0	0	0	**13**

Source: INSPEN (2019)

[181] KRI collaborated with INSPEN to perform a market rental study at the private housing nearby the selected PPRs in our study. The market rental survey was conducted by the Valuation and Property Services Department (JPPH).

It could be observed that PPR Jalan Sungai residents have access to as many as 13 affordable private housing schemes located less than 5km away from their PPR. Conversely, residents in PPR Wahyu and PPR Beringin[182] have only three alternative private housing options that they can consider. Unfortunately, none of the private housing schemes surrounding PPR Kerinchi offer rental rates of less than RM500.

The market rental survey also gathered the number of alternative private housing schemes with monthly rental rates between RM501 – RM1,000. Table 5.9 suggests that there are numerous options available for PPR residents, but it may be financially inaccessible.

Table 5.9: Number of alternative private rental housing schemes between RM501 – RM1,000 per month, by distance to PPR

	<2km	2.1 – 5 km	5.1 – 8 km	8.1 – 10km	>10.1km	TOTAL
PPR Beringin & PPR Wahyu	1	8	5	0	0	**14**
PPR Kerinchi	1	0	2	1	0	**4**
PPR Salak Selatan	3	2	2	3	3	**13**
PPR Jalan Sungai	12	12	4	0	0	**28**

Source: INSPEN (2019)

Firstly, to even consider the available options from Table 5.8 and Table 5.9, PPR residents have to accept a rental amount of between 2 to 7 times their existing rental amount. By opting to remain, PPR residents are able to enjoy a much lower rent compared to prevailing market rates for private rent. With rent being as low as RM124, PPR tenants' financial burden is alleviated by residing in social housing.

Secondly, even if residents were willing to leave social housing, the availability of options comparable to PPRs within a 5.0 km radius remains limited. Graduation from social housing should not require relocating PPR residents away from their existing socio-economic environment which form and contribute to a big part of their livelihoods.

Finally, by opting to remain in the PPR unit, residents can enjoy security of tenure and are not subjected to the various costs, processes and risks that they would otherwise encounter when engaging in tenancy agreements with individual landlords.

The survey findings are also in line with research conducted in the social housing sector in Australia where tenants prefer to permanently stay in social housing[183]. Wiesel and Pawson (2015) found that expensive private housing and secured occupancy were among the reasons hindering tenants from exiting social housing.

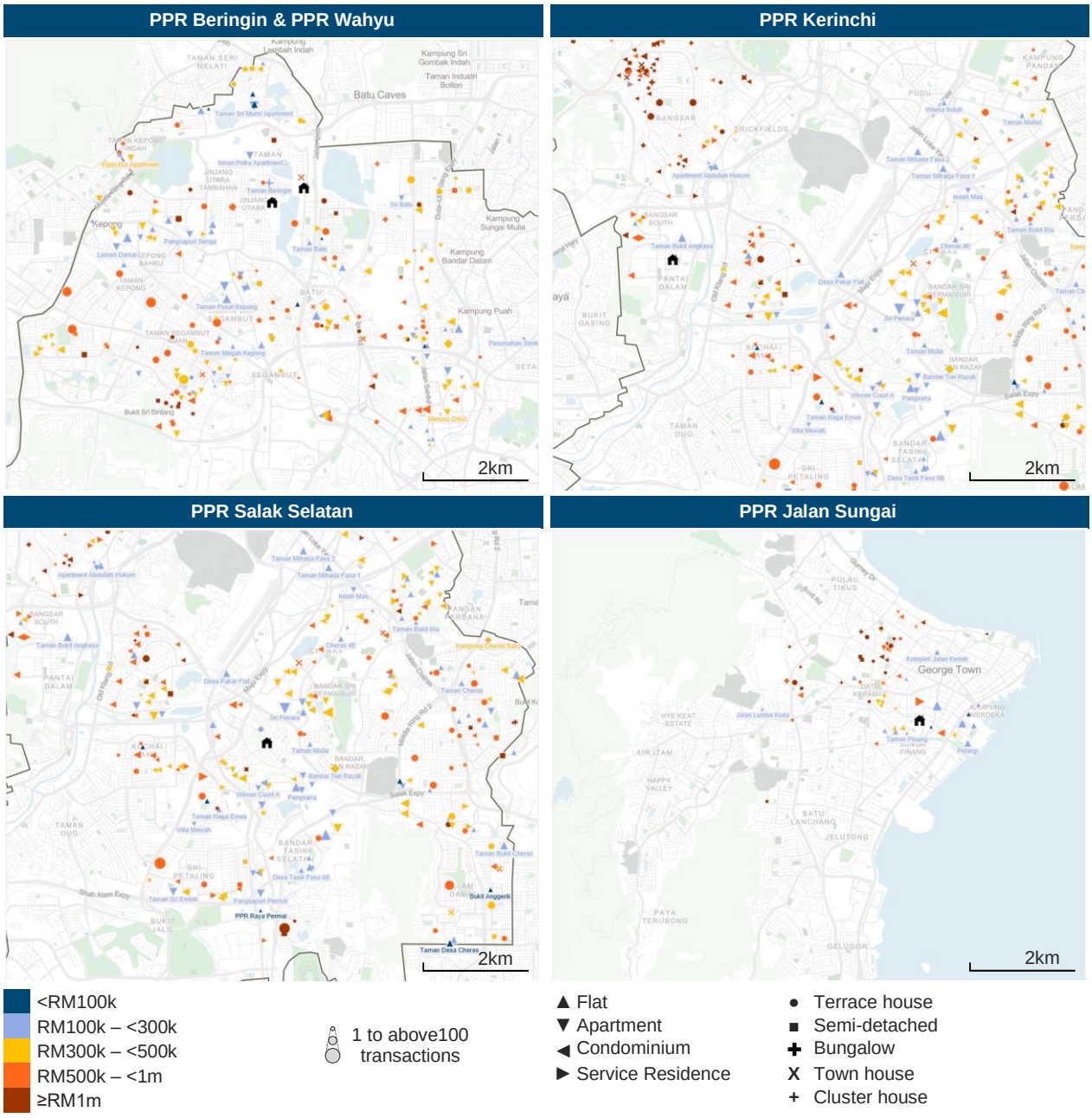
[182] PPR Wahyu and PPR Beringin are located in same location, approximately 7.0km of distance.
[183] Wiesel et al. (2014)

5.4.2. Transacted residential units surrounding the PPR area

Apart from rental options, another consideration is home ownership. Data on housing unit transactions in the immediate vicinity of the PPRs serve as a proxy to describe the options available to PPR residents for ownership.

The following figures describe the transacted housing units from January 2017 through December 2018[184] in the vicinity of the surveyed PPRs.

Figure 5.6: Transacted housing units within the PPRs vicinity, 2017 – 2018



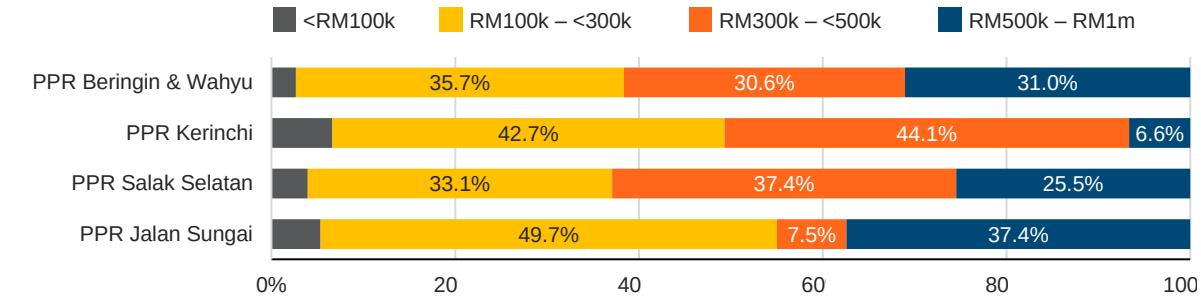
Source: Brickz (n.d.) and KRI calculations

[184] The same period through which KRI's survey is conducted.

All the surveyed PPRs are located in property markets that contain diverse housing types, albeit at different price ranges. However, a deeper inspection reveals marked distinctions from location to location. Figure 5.8 through Figure 5.11 summarize the median built up area and median transacted price for all residential property transactions below RM1.0 million within a 3.0 km radius of the PPR.

Firstly, by employing a median multiple of 3x the annual household income, it could be seen that regardless of location, eligible PPR households have options that are mostly limited to flats, apartments or cluster homes. Moreover, it is observed that between the two-year period of 2017 – 2018, residential transactions below RM100,000 accounted for between 2.7% and 6.6% of all housing transactions in the area. Most housing transactions in the sub-sale market were skewed towards houses priced at above RM300,000, as illustrated in Figure 5.7.

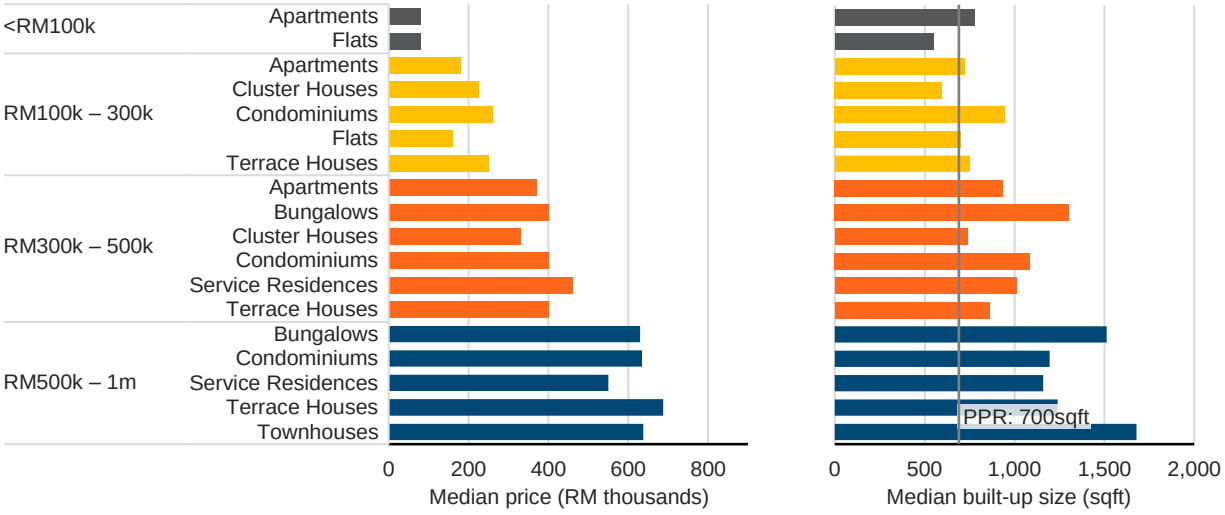
Figure 5.7: Proportion of sub-sale housing transactions within 3km, by PPR and price range, 2017 – 2018



Source: Brickz (n.d.) and KRI calculations

Secondly, the options that prospective graduates might afford generally do not provide more space than what is available in their existing PPR unit[185]. In order to afford more space, households have to contend with house prices significantly higher than what they are able to afford (Figure 5.8 to Figure 5.11). However, this would also be true for households residing outside PPRs[186].

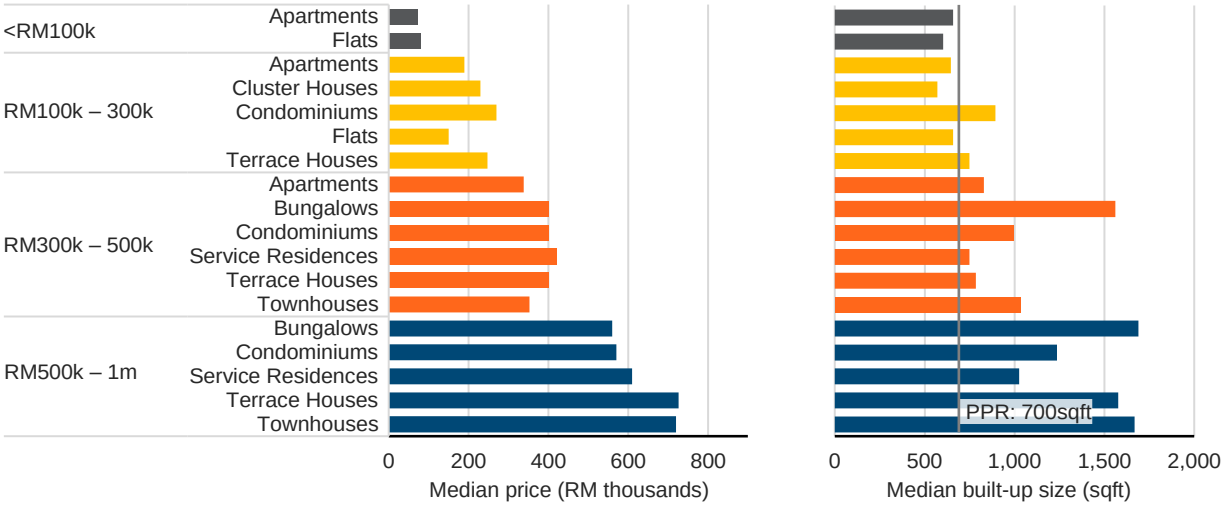
Figure 5.8: Transacted property units within 3km of PPR Beringin and Wahyu, 2017 – 2018



Note: Surrounding townships include Jinjang, Kepong, Segambut and Sentul.
Source: Brickz (n.d.) and KRI calculations

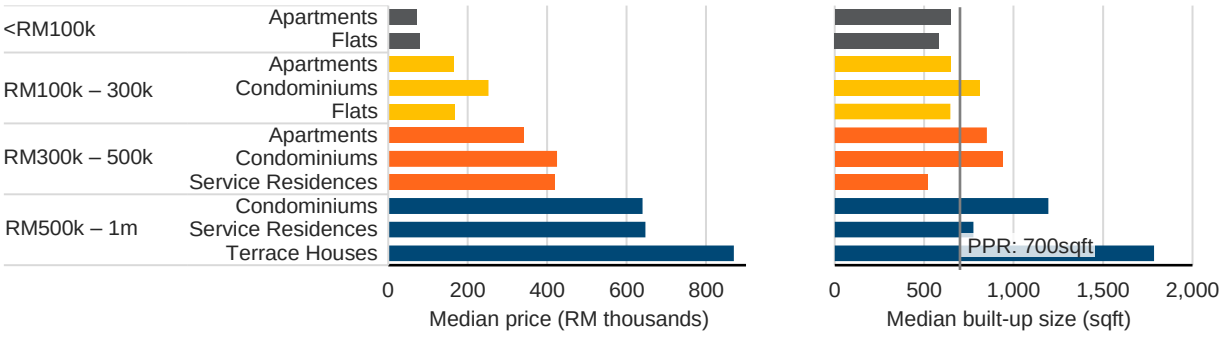
[185] PPR units typically have 700sqft of space or less.
[186] KRI (2015)

Figure 5.9: Transacted property units within 3km of PPR Salak Selatan, 2017 – 2018



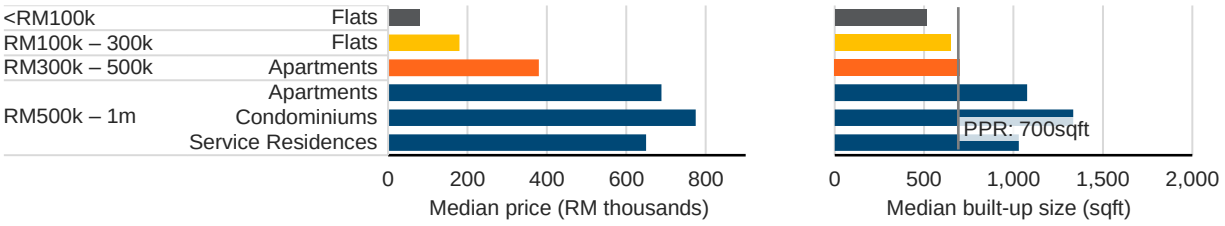
Note: Surrounding townships include Bandar Tasik Selatan, Cheras, Desa Petaling, Kuchai Lama, Salak Selatan, Sri Petaling and Sungai Besi.
Source: Brickz (n.d.) and KRI calculations

Figure 5.10: Transacted property units within 3km of PPR Kerinchi, 2017 – 2018



Note: Surrounding townships include Bangsar, Damansara Heights, Kerinchi, Kuchai Lama, Sungai Besi and Taman Desa.
Source: Brickz (n.d.) and KRI calculations

Figure 5.11: Transacted property units within 3km of PPR Jalan Sungai, 2017 – 2018



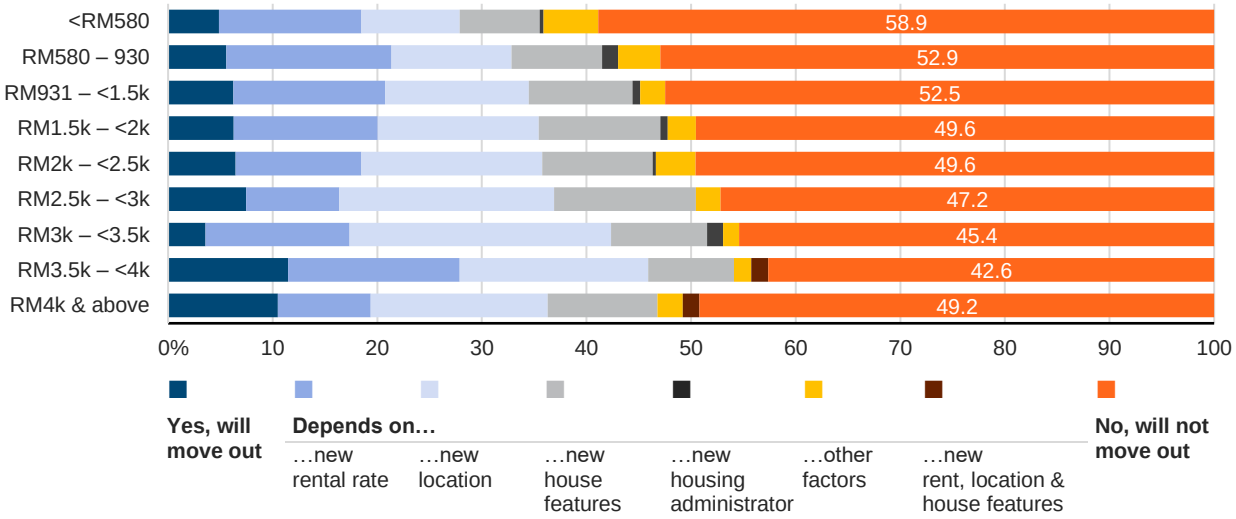
Note: PPR Jalan Sungai is situated in Georgetown.
Source: Brickz (n.d.) and KRI calculations

Thirdly, some PPR units are available for sale from RM35,000 to RM42,000, with certain restrictions such as a 10-year moratorium on its sale and a caveat lodged against its sale in the free market. This is a normal condition under asset-based welfare whereby houses allocated within the social sector should remain under social provisions for future use. However, this might be to the detriment of the PPR homebuyer, as they will not benefit from any price escalation that is possible in the free market.

5.4.3. PPR tenants prefer to stay in social housing

To assess PPR tenants' readiness to graduate from social housing, respondents were asked if they would choose to move out to other government-assisted projects or private housing, given the opportunity to do so. The findings for both tenants and owners are illustrated in Figure 5.12 and Figure 5.13 respectively.

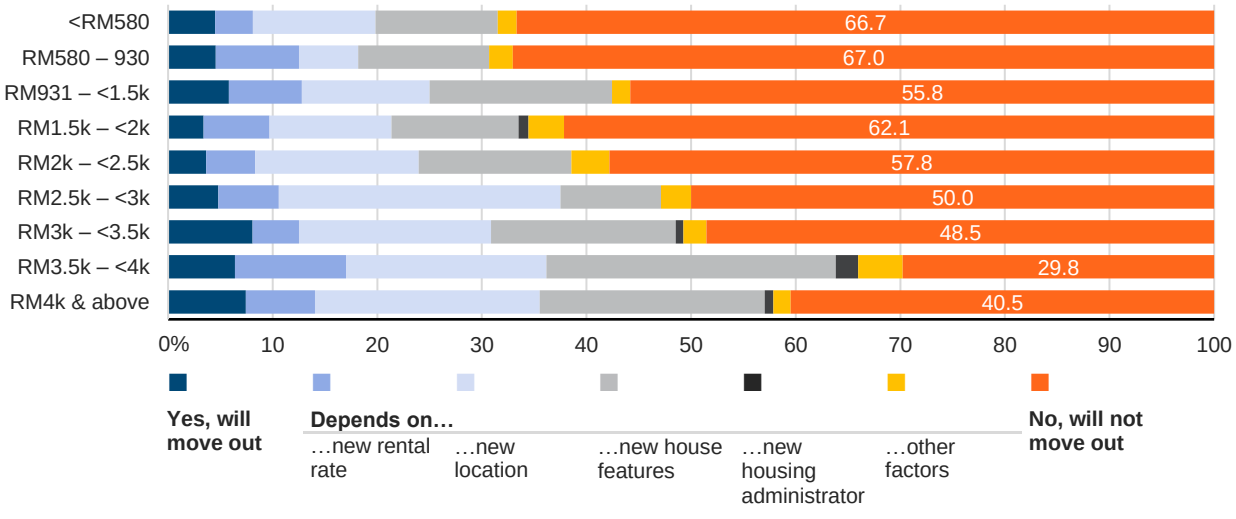
Figure 5.12: PPR tenants' decision to move out, by current household income range



Interestingly, our survey found that more than half of PPR tenants (51%) across all income ranges were reluctant to move out, particularly those with household incomes below RM2,500. Only 166 tenants (6.3%) expressed intention to leave if provided the opportunity.

Despite demonstrating the capacity to exit social housing, most of the tenants that were identified as living above basic needs (47.7%) opted to stay. As demonstrated in Figure 5.12 on average, only 7.3% of these tenants indicated that they would leave PPR whereas 44.7% of them cite locational and characteristics of the prospective housing unit as major factors influencing their decision to exit social housing.

Figure 5.13: PPR owners' decision to move out, by current household income range



On the other hand, our findings also show that 649 PPR owners (54%) intend to stay in their unit. Despite owning the unit, approximately 5% of PPR owners indicated that they would leave PPR whereas the rest of the owners would only leave PPR under the right condition, as shown in Figure 5.13.

5.4.4. Discussion

The analysis indicates that tenants in the surveyed PPRs have limited options to progress from social housing. What was revealed by INSPEN's survey was the limited availability of PPR-comparable options below RM500. Even when the range was increased to RM501 – RM1,000, the number of rental options did not correspond to the proportion of PPR residents living above basic needs[187].

If existing PPR tenants were considering the option to buy a housing unit in the private market, the only options they can afford (based on the 3x median multiple) are a very limited selection of flats, cluster houses, apartments and condominiums. In addition, most of these dwellings have a built-up area smaller than the 700sqft PPR units that they currently have.

Of the PPR tenants identified as eligible for graduating from social housing, 47.7% clearly reject the idea of doing so. 44.7% might consider moving, subject to various pre-requisites, while only 7.3% reported intentions to leave.

Table 5.10: PPR households' decision to move out, by ability to meet basic needs

Decision to leave PPR	Above Basic Needs		Satisfy Basic Needs	
	Number of tenants	Percentage	Number of tenants	Percentage
Will leave PPR	50	7.3%	50	2.5%
Depends on various reasons	305	44.7%	830	42.0%
Will not leave PPR	325	47.7%	1,024	51.8%
Missing responses	2	0.3%	5	0.3%
Total	**682**	**100.0%**	**1,975**	**100.0%**

In conclusion, the analysis indicates that there are very limited realistic options for tenants to relocate themselves. This is evident from the various affordability metrics applied to private markets for both rent and ownership. It is clear that tenants are quite reluctant to move from social housing even when they earn beyond the basic needs threshold. Furthermore, despite the problems highlighted in Box 3.1, there are reports that suggests higher number of households are in the waiting list for the social housing program. For example, in 2018, approximately 80,000 families were on the PPR waiting list [188]. Whereas, between 2019 – August 2021, only 15.4% the total 9,949 applications received by DBKL was approved[189], indicating that the remaining 84.5% were put in the PPR waiting list.

[187] See Table 5.6
[188] Lim and Michael (2018)
[189] Sinar Harian (2021)

CHAPTER

06

CHAPTER 6

KEY FINDINGS AND POLICY RECOMMENDATIONS

"With adequate social opportunities, individuals can effectively shape their own destiny and help each other. They need not be seen primarily as passive recipients of the benefits of cunning development programs. There is indeed a strong rationale for recognizing the positive role of free and sustainable agency-and even of constructive impatience".

Sen (1999)

6.1 A Contribution to Socio-Economic Objectives by Building Enabling Social Housing Policies

Historically, the provision of public housing was due to the high numbers of squatters as a result of the accelerated rural-urban migration beginning in the 1970's. Generally, squatter settlements are a natural and temporary by-product of urbanisation as workers flock to urban areas in pursuit of jobs before sufficient housing is available, or before adequate funds are available to enter the formal housing market. Over time, it is assumed that households will improve their economic standing and move out of or upgrade their housing units. Slums or informal settlements were considered as cheap housing for the poor working their way into the urban economy.

Over the years, public housing programmes evolved into social housing (PPRs), and it is still targeted at providing shelter for poor households. The number of households in poverty from the 5 PPRs housing complexes surveyed is greater than 60% (those earning less than PLI of RM2,208) with more than 21% considered as 'hardcore poor' (earning less than food PLI of RM1,038). Poverty is higher for households headed by part-time workers (80.6%), pensioners (72.1%), housewives (70.5%) and those unemployed/not working (70.6%). 35% of household heads are self-employed or part-time workers, and 13% are tertiarily educated. Most residents' place of employment are near their homes, especially among the self-employed. While the majority of residents are renters, there are however a significant proportion of owner-occupiers (more than 20% in Kuala Lumpur). All residents in PPR Jalan Sungai, Pulau Pinang rent. A majority of household heads are in the older age group, with a median age of 52 – 54 years.

As mentioned earlier in the report, this report refers to the below propositions as the 'justification' of the direct provision of housing by the state[190];

(a) that market forces will not result in acceptable housing standards for all the population, especially those in need, and
(b) that improving the housing standards of those who are living in sub-standard accommodation is better done through the direct provision of housing rather than providing additional financial resources to the poorly housed.

[190] UN-Habitat (2009)

This report supports proposition (a) that market forces will not result in acceptable housing standards and prices for the poor, with a caveat. Government assistance is normally provided when house prices supplied by the private market sector fails to accommodate the economically disadvantaged. However, when government assistance extends for more than half or in some cases, nearly the entire population, it exemplifies the failure of both government intervention and market solutions.

We fail to support proposition (b) because the direct provision of housing by the state (as demonstrated in the case studies) have not created housing of acceptable standards.

The direct provision of formal social housing by the government was considered a solution to house the poor with better living conditions compared to squatter settlements, but it inadvertently created new problems of 'poor housing for the poor' in stratified buildings. All residential complexes remain in poor quality due to inadequate funding for maintenance and repair. Most buildings do not provide scheduled maintenance services to prevent further building decay. The physical condition of buildings becomes more prone to disrepair as a result of poorly conceived design and/or substandard construction. This is particularly severe in complexes of higher densities. These factors not only threaten positive living conditions but inevitably increases the costs of maintenance to those who own the units.

This study is unable to analyse the proposition of government providing self-help housing aid to the poorly housed since this scheme is not practiced in Malaysia.

The privatisation of public rental stocks with sitting tenants acquiring ownership at nominal prices has created the negative consequence of 'poor homeowners' who own their dwelling but lack the means to maintain the property in good repair. 'Poor homeowners' living in sub-standard housing condition undermines asset-based welfare policies which promotes wealth and equity through home ownership.

Furthermore, current practice of administrators for social housing seems to suggest:

1. Social housing is viewed as a 'construction' solution (i.e. based on units constructed) rather than a 'management' responsibility by governments (i.e. within social improvement objectives with proper filtering of households and maintenance of social housing units).
2. Policies were mainly targeted to numbers built; variety and acceptable standards were secondary concerns.
3. The development perspective focused on building housing complexes; little attention was devoted to the residential environment or positive living conditions.

Findings from these case studies follow a well-known phenomenon in housing studies where the creation of a universal 'housing queue'[191] makes it extremely difficult for the poor to have decent housing, while the not-so-poor remain ill-housed. As illustrated in Chapter 5, there are extremely limited options for residents to migrate from the social to the private housing sector. Angel (2000) further encourages governments to manage housing system in its 'entirety'- because there is little merit of devising housing policies that solely focuses on the poor, in hope that 'the market' will take care of the rest, without paying attention to whether the market functions properly.

Often, policies are carved out for the purposes of welfare such as social housing (catering for basic needs) are designed without cognisance of the need to regulate prevailing market conditions. This, along with the continuous subsidisation of private sector housing (for example, in the form of 'innovative financing'[192] or direct grants to purchasers[193]), creates an unaffordable housing market that forces more households into the social sector. Social housing will not be catering for just the poor but also extend to middle-income households.

6.2 Setting the Objectives for Social Housing Policies

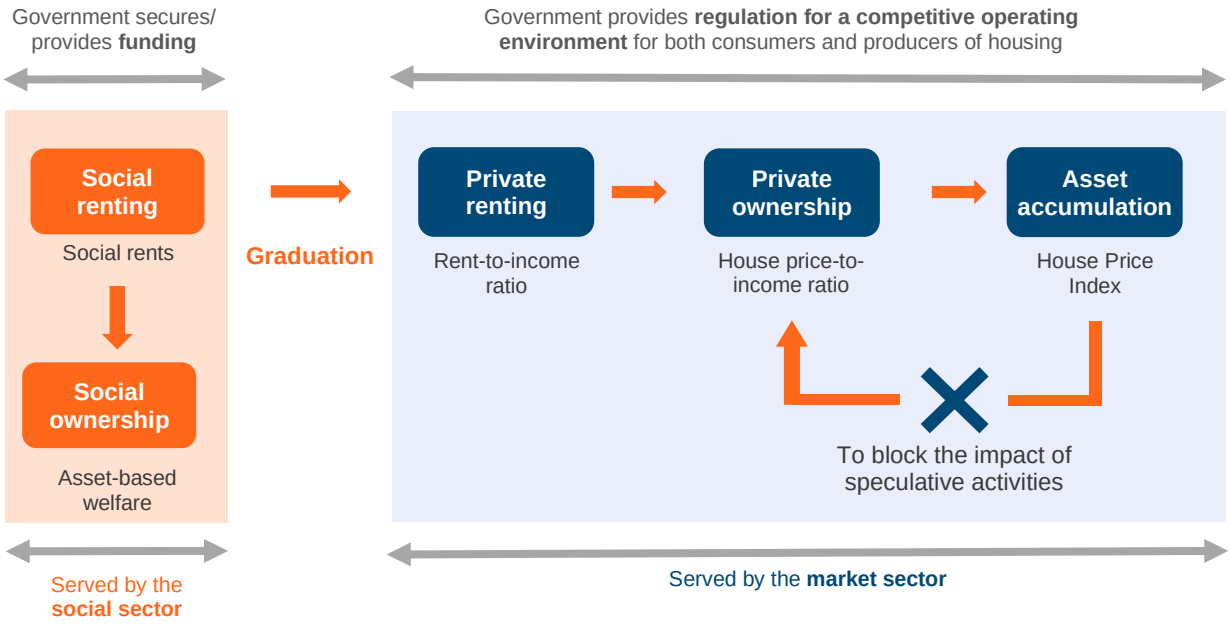
International benchmarks for social housing policies appear to support the following objectives[194]:

1. Decent lives for people in need despite higher living costs.
2. Transition homes for the underprivileged.
3. Affordable, integrated (as opposed to segregation of the poor) and well-maintained housing estates.
4. Security of tenancy and stability for people in need to:
    a) support a good quality of life;
    b) provide a platform for people to take up education and employment; and
    c) facilitate transition from social housing to affordable housing or tenancy in the private rental market.

In line with Dasar Perumahan Negara 2.0 (2018 - 2025) (DRN 2.0), an enabling policy framework should aim to create a progression to enable households to migrate from social renting to private renting and eventually achieve home ownership. Under this framework, a case can be made to classify social housing as transition homes for eligible tenants, but with an exit pathway. Transition homes can be in the form of social renting or ownership (asset-based welfare). Both types of stock be retained under the management of the state as strategic assets for future utilisation in the social sector.

[191] Ramirez (1978)
[192] Extending housing mortgage period under the pretext of making homes appear cheaper through lower monthly payments; or requesting the government to liberalize unsold units from the starting price of RM600K. Source: Suraya Ismail and Ho (2021)
[193] KRI (2015)
[194] Government of Western Australia (2017)

Figure 6.1: The different roles of government for the social and market sector



Source: Adapted from Suraya Ismail et al. (2019)

The management for social housing policies can be executed through 3 policy thrusts:

1) **The management of PPR households**: to create a household registry based on housing needs with eligibility criteria that extends beyond income levels; for example, to include household size, infirmity and physical disabilities.
2) **The management of PPR housing units:** to create a housing registry for social housing units supplied by both the public and private sectors.
3) **The management of private sector housing units**: to prevent graduating households from ending up in worst-off housing.

6.2.1. The management of PPR households

Who is in?—To introduce a tiered eligibility basic-needs approach

One of the eligibility criteria for social housing is a gross household income of less than RM3,000. This criterion automatically includes 20 – 25% of Malaysian households. Hawati Abdul Hamid et al. (2019) suggest that the use of gross income is imprecise in capturing households' deprivations. For example, the addition of just one other criteria of household size would rectify an inclusion-exclusion error of approximately 20%. Therefore, it suggests that a tiered eligibility criterion should be introduced for better filtering purposes.

Table 6.1 proposes the possibility of implementing a tiered eligibility criterion based on household consumption characteristics[195], by household size.

Table 6.1: Tiered household eligibility criterion

Household Size	KRI Scale (RM)	Square Root Scale (RM)
1	1,200	1,200
2	1,932	1,697
3	2,352	2,078
4	2,532	2,400
5 and above	2,544	2,683

Source: Hawati Abdul Hamid, Ho, and Suraya Ismail (2019) and KRI calculations

By employing a tiered eligibility criterion, a more targeted provision of social housing could be met for those who are only meeting basic needs, irrespective of their household size. People are poor because they are unable to meet a certain standard of living; they are not poor because there are too many or too few under one roof.

A household registry will facilitate the management of PPR households. The database should consist of both demographic and economic profiles of PPR households e.g. household income, size, and physical disabilities. Local councils can employ the basic-needs approach as one of the criteria for entry into the registry and a Rent-to-Income (RTI) 20 – 25% ratio as an indicator for the exit strategy. Each state may create their database with filtration indicators (basic needs approach, RTI) specific to the cities' cost of living and rental market conditions.

Policy options:

1. To create a household registry based on housing needs for the urban poor; to have assistance from E-Kasih or other similar databases on the urban vulnerable/poor.
2. To utilize a filtration criteria of basic needs approach for households into social housing programmes. The eligibility criteria of a standardized RM3,000 should be revisited.
3. To institutionalize periodic updates on the demographic and economic profile of PPR residents, the cost of living and private rental prices in the local area for the efficacious management of households in the social sector.

Who is 'out'?—Households who live above basic-needs should migrate into private housing schemes

There are households that have surpassed the eligibility criterion—those who live above basic needs thresholds and with a RTI ratio lower than 20 – 25%. These households demonstrate the capacity to migrate into the private housing market.

[195] Whether a household merely satisfies basic needs or is living above this level.

Aside from income, other factors should be considered in devising graduating strategies. For example, a significant proportion of household heads under the rental programmes are above the age of 45. Such individuals face difficulty in securing housing mortgages. Furthermore, for ownership in stratified homes, the housing cost burden will consist of both mortgage repayments and sinking funds/maintenance fees.

Another example would be the locational characteristics of new homes. The findings of this study suggest that residents are generally satisfied with their present location in terms of its centrality and access to key amenities. However, rental rates in the surrounding areas are beyond the RTI 20 – 25% affordability threshold for graduating households. In order to circumvent this problem, it is suggested that the government circulate housing vouchers to households paying rent in excess of RTI 20 – 25%.

For example, Household A earns RM3,500. Let us say that Household A's new rental rate in the private housing market is RM1,000. Following 25% RTI ratio, the affordable rent for Household A is RM875. Therefore, the government should incentivize the remaining amount (RM125) via housing vouchers. However, it is also important to ensure that private landlords do not exploit the scheme by renting out housing units which fail to meet good quality housing standards or increasing rents speculatively. Therefore, there is need for a Rental Tenancy Act to protect specific 'graduating' households from poor housing experiences.

Policy options:

1. To create exit strategies that support household in finding affordable homes- the creation of housing allowances system to promote more options/choices.
2. To promote an 'integrated housing experience' (as opposed to segregation of poor households) and incentivize the provision of affordable rents in the private market.
3. To utilize the Rental Tenancy Act as a safeguard against the possibilities of 'rent hikes' by the private sector due to government housing vouchers.

To discontinue social ownership especially in high-density, stratified buildings and to inform residents of the high costs of maintenance

The transfer of public rental stocks to sitting tenants for ownership at nominal prices leads to the creation of 'poor homeowners'-those who own the dwelling but lack the means to maintain the property and complex in good condition. This could easily lead to a negative home equity position for owners. Furthermore, the selling of social housing stocks to sitting tenants will deplete the state's assets for future use in the social sector. This is critical in highly urbanized localities where there is always a burgeoning need for social housing.

Rent levels in social housing is generally determined to recover the costs of maintenance and refurbishment. Following life-cycle costings (LCC) principles, it makes financial sense for governments to build better-quality buildings in order to minimize maintenance costs. Low quality buildings will increase the costs of maintenance, and this will be passed as higher rents to poor households or conversely lead to a vicious cycle where insufficient resources for maintenance sees a continuous physical degradation of building complexes.

The findings also suggest that PPR households at their current income levels can afford higher rentals than the present RM124. This can serve as a major contribution towards better upkeep and the maintenance of the complexes over time.

Policy options:

1. The state must give prospective buyers of social housing sufficient information on the costs of maintenance and repairs for the unit and complex. This can be executed with technical input from professional facilities managers and building condition surveys (BCS).
2. Sitting tenants must be made aware of the higher costs of maintenance associated with taller buildings.
3. To increase the rentals of PPR to the equivalent costs of building maintenance, provided the buildings were originally built to optimize maintenance and refurbishment costs.

6.2.2. The management of PPR housing units

Part I: Policy recommendations for existing PPRs

To refurbish existing PPR units to multiple Gross Floor Area (GFA), and for the building design to account for old-age and physical disabilities

The Gross Floor Area (GFA) of PPR units (<700sqft) is lower than the revised National Housing Standards 2019, which recommends a minimum GFA of 800sqft. International comparison with other countries[196] also suggests that a focus on providing better housing standards for PPR are critical.

Housing standards in Malaysia have primarily focused on the building and construction specifications for new dwellings. They do not provide a framework or guidelines to upgrade the quality of existing housing stock, nor does it define suitable occupancy levels to prevent conditions of overcrowding.

For example, in the UK, there are clear standards regarding the minimum floor area and occupancy level by number of bedrooms, whereas Singapore offers multiple public housing schemes (with varying GFAs) targeted at different sizes of households. Hence, it is important to recognise that the current approach of 'GFA: one-size fits all' poses a major problem of inefficient use of space for the heterogenous nature of household size.

Our findings show that the household size is generally between 3 to 6 persons. Furthermore, household heads are also older, with their median age ranging from 52 to 54 years. Moreover, 1 in 10 households have at least one member with physical disabilities.

[196] UK and Singapore. Refer to Appendix G for more details.

Based on the satisfaction index scores and regression analysis discussed earlier, there are several improvements that could be made to improve living conditions. These are as follows:

- Housing units:
  - inadequate sizes of 'shared spaces' (i.e. living room, dining room, kitchen and yard)
  - safety within/surrounding the unit.
- Housing complex:
  - safety and security
  - sanitation, cleanliness and hygiene
  - 'floor-sensitive' variables (i.e the higher the unit is, the worst-off it is for households)- the number and condition of lifts, location of refuse chambers, and the quality of staircases
  - 'non-floor sensitive' variables- corridors and safety railings;
  - unpaid 'shared spaces'- community halls, *surau*, playgrounds, and the number of parking spaces.

Additionally, the regression analysis indicates that PPRs do not cater for those with disabilities/infirmities, as households with such members are more likely to be dissatisfied overall.

Policy options for refurbishments:

1. Improve the GFAs of PPR units following good quality housing standards.
2. Introducing multiple GFAs to accommodate different household sizes; as per Singapore's HDB model.
3. Account for old-age and physical disabilities in the design of units and complexes.
4. Include participatory processes of user satisfaction surveys and building technical assessments for refurbishments to meet the functional requirements of households with reasonable maintenance costs.
5. Design better public spaces and amenities.

To demolish PPR buildings if the maintenance and/or upgrading cost are too expensive

High rise PPR complex requires good maintenance practices to preserve its value throughout the building lifespan. A strategic construction planning technique is needed to ensure adequate maintenance costs are estimated for the duration of the building life. This can be achieved through the implementation of life-cycle costing (LCC) in the development and refurbishment of PPR projects.

Several PPR complexes have high population densities. High densities coupled with substandard maintenance practices will accelerate the deterioration of PPR complexes into urban slums. More recently, the Covid-19 pandemic highlighted the increased risk to public health in highly dense complexes and overcrowded homes.

It is also suggested that the existing social housing stock is audited to ascertain the most feasible course of action, whether demolition would be the best option for some buildings.

Policy options for maintenance or demolition:

1. Implement building audits to all existing social housing stock
2. To design with LCC parameters; maintenance and building rehabilitation concerns
3. Invest in building condition surveys (BCS) for efficient monitoring and functioning of buildings

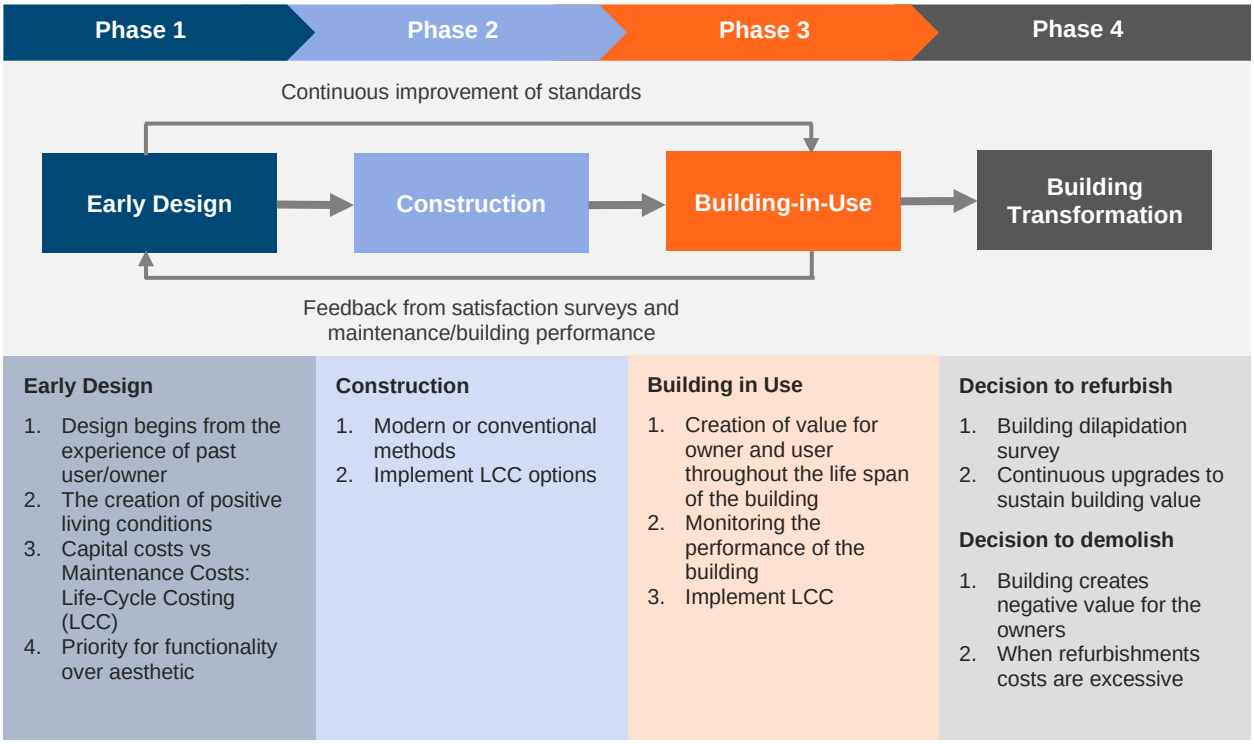
Part II: Policy recommendations for new PPRs (incoming supply)

To align the housing standards of social housing (PPR) to affordable housing, but with multiple GFA units.

The minimum standards for all housing in Malaysia should be of similar quality, irrespective of whether they are present in the social or market sector. Universal standards are one of the reasons why most social housing system are successful. However, it is important to devise multiple GFAs in the social sector to circumvent the problems of overcrowding or sub-optimal space utilization.

Therefore, we propose a method for embedding the continuous improvements of housing standards into the building redevelopment framework. It consists of 4 phases: **Early Design, Construction, Building-in-Use** and **Building Transformation.**

Figure 6.2: Building Redevelopment Framework



The development of social housing ideally must take into consideration the motivation to create value for both owner and user during the lifespan of the building. Therefore, the *Early Design* phase begins with the collection of inputs from user satisfaction surveys and technical assessments of building performance for designs, first, to satisfy the functional requirements of households, and second; able to be maintained at a relatively reasonable cost.

The continuous improvement of housing standards will arise from the interplay of *Early Design* and *Building-in-Use*. This iterative process can be achieved through the technical input of professional and a comprehensive analysis of the occupants' profiles, which reflect their specific requirements. These standards and regulations must be **updated regularly**. This iterative process is different from the current linear process in devising building standards, where there is no feedback loop into the design process from the perspectives of users and owners of the buildings.

Policy options:

1. To ensure the minimum standard for social housing adheres to the National Housing Standard for affordable homes.
2. To derive multiple GFAs house units with the attendant occupancy levels.
3. To account for old-age and physical disabilities in the design of units and complexes.
4. To institutionalize a continuous process for the improvement of standards in the building redevelopment process.
5. To include a participatory process of user satisfaction surveys and technical assessments for building designs to meet the functional requirements of households and able to be maintained at a relatively reasonable cost.
6. To create better public spaces and amenities.

To align the financial incentives between 'those who build' and 'those who maintain' through Life-Cycle-Costing (LCC)

There appears to be a misalignment of financial incentives between parties involved in the funding of the building (capital costs) and the management (maintenance costs) of the building. This is because social housing is built by funds from the Federal Government, but the maintenance costs are borne by Local Councils. If the capitals costs are low due to poor-quality materials and design, then normally, the maintenance costs would be higher. Financial incentives can be better aligned with a LCC method. The costs of constructing the building (capital costs) and the attendant costs of maintenance (building operation costs) will be transparent for both parties. Decisions on LCC could be executed during the *Early Design* stages of the building process and followed through into the *Construction* and *Building-in-Use* phases.

Some local councils might face financial constraints in being able to afford the high maintenance and rectification costs of PPR buildings. Hence, the implementation of LCC is required to forecast the long-term maintenance cost and therefore assist in aligning the incentives between Federal and State governments.

Policy options:

1. To implement LCC for PPR projects
2. Align the financial incentives between Federal (the entity that builds must ensure maintenance costs are reasonable) and State government (collects rent for the purposes of scheduled maintenance)

Relocation must occur in core urban areas, with good accessibility and amenities

Our findings show that most residents do not travel far for employment, schooling, daily needs and social activities/ leisure. Hence, it is crucial to ensure that the urban poor/squatters are relocated to areas with good accessibility to key amenities appropriate for their demographic and lessen any negative impact from further displacement.

Policy options:

1. To continue prioritising the relocation of vulnerable and displaced communities within their existing neighbourhoods and minimise disruption for employment and schooling.
2. To continue providing appropriate job opportunities and affordable services within the vicinity of PPRs, by situating them in core urban areas.

6.2.3. The management of private housing stocks

An integrated database on building condition and rental is needed to project good quality of housing for all

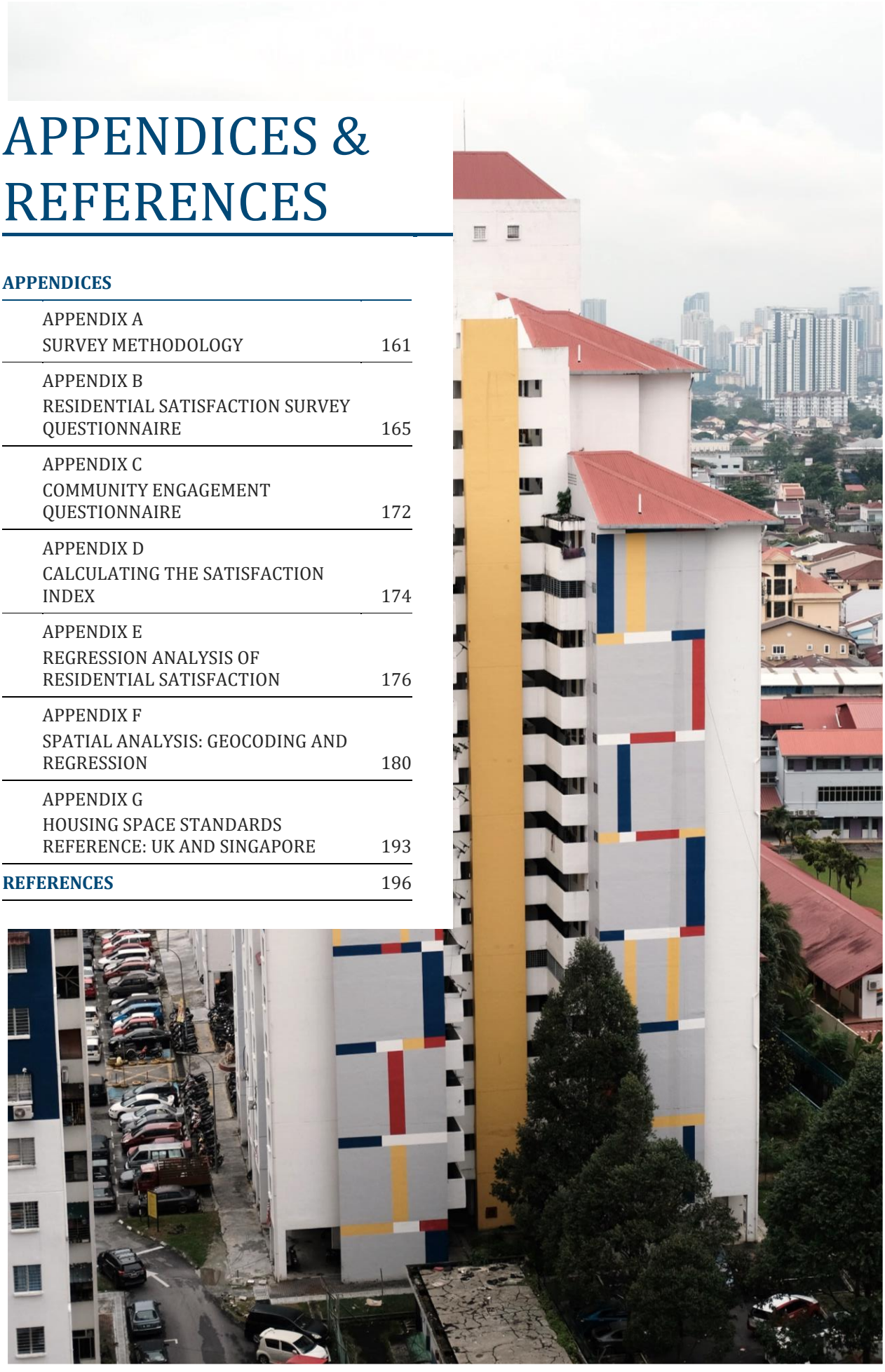
There are households who are eligible for graduation and yet continue to reside in PPRs; and there is also a considerable percentage of residents in the private rental market who are eligible for social housing.

Therefore, an integrated database of building quality and rents would help facilitate the management of housing eligibility and occupancy. This database can provide access to information such as the supply and rents of available units, which in turn could lead to better market efficiency and curb incidences of excessive speculation in the private rental market. The database may also serve as a tool to manage and identify changes in housing occupancy such as incidences of overcrowded homes or the increase in the number of vacant properties.

Policy options:

1. A National Housing Survey is critical to populate the housing registry. This could be executed in major cities where social housing is required.
2. To conduct Building Condition Surveys (BCS) to deliver good quality housing for both the social and market sector.
3. To set up an integrated rental database to capture the supply and rents offered in the private sector.
4. To monitor the general affordability of housing prices and rents.

APPENDICES & REFERENCES



APPENDICES

APPENDIX A

SURVEY METHODOLOGY

Sampling design

This report uses the satisfaction survey for primary data collection. Given the research hypothesis is to investigate the satisfaction of residents living in high density housing estates and the effect of relocation on the residents, the study has adopted the following sampling design.

Table A1: Four-stage filtration process

Stage	Description
Stage 1: Sample selection from states with high population density.	The study analysed the challenges that comes with urbanisation, particularly the impact of densification. As the PPR programme are implemented nationwide, the states are filtered based on their population density. According to DOS[197], Kuala Lumpur was the most densely populated state with with 6,891 persons per km, followed by Pulau Pinang with 1,490 persons per km.
Stage 2: Sample selection of states with high urbanisation rate.	As the study looks into problems that results from urbanisation, states with high urbanisation rate are preferred, with Kuala Lumpur and Putrajaya recorded as the most urbanised states (100% urbanisation rate), followed by Selangor (91.4%) and Pulau Pinang (90.8%). Consequently, Kuala Lumpur and Pulau Pinang were chosen based from their population density and urbanisation rate.
Stage 3: Sample selection of PPR projects with more than 500 units.	As of May 2015, there were 27 PPR projects in Kuala Lumpur and 4 in Pulau Pinang which includes the PPR *Disewa Dasar Baru* and *PPR Dimiliki*. Since the focus of the study is PPR for Rental, the *PPR Dimiliki* projects were excluded from the list. To ensure adequate sample size and improve reliability of analysis, the PPRs were filtered down to those that have more than 500 units per project.
Stage 4: Sample selection of PPR projects that are built after 2000 with buildings that are aged exceeding 10 years.	Firstly, the PPRs were selected from those that were built after the year 2000 due to better building specifications in terms of size and amenities. Secondly, the age of the buildings should be more than 10 years to account for the time it takes for households to form a habitat and the adjust to living in the PPR. Only eight projects in Kuala Lumpur and one in Pulau Pinang met these two criterias.

From these four stages, five PPRs were selected as case studies, with four projects from Kuala Lumpur and one from Pulau Pinang (Table A2).

Table A2: Details of selected PPRs

	PPR Beringin	PPR Kerinchi	PPR Wahyu	PPR Salak Selatan	PPR Jalan Sungai
State	K. Lumpur	K. Lumpur	K. Lumpur	K. Lumpur	P. Pinang
City Council	DBKL	DBKL	DBKL	DBKL	MBPP
Building occupancy date	2003	2003	2002	2004	2000
No. of blocks	6	6	3	2	2
No. of floor levels	17	17	17	17	21
Total no. of units	1,896	1,896	948	632	568

[197] DOS (2011)

Questionnaire design

Data was collected through a structured questionnaire that was designed in Malay. The self-administered questionnaire was distributed in a booklet form with close-ended questions where the respondents can tick their answers. Prior to the main data collection, the questionnaire was pre-tested to determine the ease and comprehensiveness of the questions. This was performed through a pilot study conducted at PPR Pantai Ria on 18th November 2015. The questionnaire was then revised following participants' feedback. The variables covered in the final questionnaire were:

1. Demographic factors—gender, age, ethnicity, citizenship, disability status, marital status
2. Socio-economic factors—educational attainment, employment status, household income
3. Current housing experience—housing tenure, duration of residence
4. Previous housing experience—type of previous residence, size of previous residence
5. Mode of transportation and ownership of vehicles
6. Locational factors—workplace, places of schooling, healthcare centres (e.g. clinics, hospitals), places of commerce (e.g. grocery stores, shopping malls, night markets), public transportation, places of recreation, places of worship, residence of friends and families
7. Residential satisfaction—housing unit, complex, locational factors, and overall satisfaction

The survey fieldwork

Prior to the fieldwork, the team engaged with the local authorities as well as the resident communities within the PPRs so inform and discuss with them on the overall survey as well as the logistics. The residents were given at least one week notice informing them of the survey. During the survey day itself, the research team acted as coordinators, while hired enumerators engaged the residents to participate in the survey. The enumerators selected were students from local universities, mainly Universiti Sains Malaysia (USM), University of Malaya (UM) and Universiti Teknologi Mara (UiTM). Students with background in design, planning, construction and real estate background were given preference for selection. The team conducted training sessions to prepare the enumerators, which included briefing on ethics and safety procedures.

The residential satisfaction survey was conducted in three phases between April 2016 to July 2017. This was partly due to the delay in the approval process and well as the research team's own limited resources. Table A.3 details the date of survey, number of households surveyed and the estimated response rates for each PPR. The survey was conducted in a few rounds for larger PPRs. In total, 3,878 respondents were interviewed with an overall response rate of 72.1%.

Table A3: Survey schedule and response rate

	PPR Beringin	PPR Kerinchi	PPR Wahyu	PPR Salak Selatan	PPR Jalan Sungai	Overall
Date of survey:						
Round 1	1–2 Apr 2017	29–30 Jul 2017	6–7 May 2017	8–9 Jul 2017	16–17 Apr 2016	Apr 2016–Aug 2017
Round 2	8–9 Apr 2017	5–6 Aug 2017	13–14 May 2017			
Round 3	15–16 Apr 2017	12–13 Aug 2017				
No. of units available	1,896	1,580	948	632	568	5,624
No. of vacant units	88	41	35	33	51	248
No. of households surveyed	1,258	1,205	669	343	403	3,878
Response rate	**69.6%**	**78.3%**	**73.3%**	**57.3%**	**77.9%**	**72.1%**

Note:
1. The response rate was calculated by accounting the number of respondents from the total units available for rental within each PPR, excluding vacant units.
2. Only 5 out of 6 blocks in PPR Kerinchi were surveyed as the excluded block was designated for transitioning / temporary residents.

Data entry and processing

The survey went through multiple stages of data processing and checking to improve accuracy and precision of data. The first stage of data checking was carried out during the survey fieldwork where the questionnaires were reviewed by the coordinators. Following the survey completion, the second stage began when the enumerators carried out data entry into Google docs which were checked by the research team. Any mistakes and inconsistencies detected during the cleaning process were referred back to the enumerators and corrected.

Accuracy sampling

An accuracy sampling was conducted to inspect the accuracy of the survey responses. This accuracy check was carried out within one month after the fieldwork for each PPRs was completed. For this purpose, about 10% of the respondents from each PPR were selected through stratified sampling design. The level of stratification accounts for tenants (1) from every floor level and (2) are representative of the overall ethnic composition of the PPR. The selected tenants were asked five random questions from the survey (aside from their satisfaction) and their answers were compared with the original results. The results from the accuracy sampling were deemed satisfactory with around 80 – 90% accuracy across the PPRs.

Survey limitations

- Due to the sampling frame, the PPRs selected are representative of high-rise PPRs located in high density and urban areas. It does not look into other types of PPR which are located in suburban areas (i.e. *PPR Dimiliki* which are landed type properties).

- As the survey was conducted in 2016 and 2017, there might some changes in terms of the existing facilities compared to at the time of the survey.

- The survey was conducted only once for all of the selected PPRs and thus only serves as a snapshot.

- Respondents who may not be familiar with the Malay language might face difficulty in answering the survey. To tackle this problem, enumerators who were proficient in other languages (i.e. Mandarin and Tamil) were employed to assist them.

- As the survey was conducted in phases, the team has revised the questionnaire after the first phase. This has resulted in some of the responses captured being limited to selected PPRs.

APPENDIX B

RESIDENTIAL SATISFACTION SURVEY QUESTIONNAIRE

Photo B1: Front cover of the questionnaire

NO. BORANG: ☐☐☐☐

BAHAGIAN A: MAKLUMAT TENTANG KELUARGA

Bahagian ini meliputi maklumat mengenai keluarga. Sila tandakan (√) pada petak yang berkenaan.

1. Adakah anda ketua keluarga?

☐ 1 - Ya ☐ 0 - Tidak

2. Apakah hubungan anda dengan ketua keluarga?

☐ 0 - Saya adalah ketua keluarga
☐ 1 - Isteri
☐ 2 - Suami
☐ 3 - Anak lelaki
☐ 4 - Anak perempuan
☐ 5 - Bapa
☐ 6 - Ibu
☐ 7 - Saudara - mara
☐ 8 - Lain - lain (nyatakan)
_____

A1. MAKLUMAT KETUA KELUARGA

1. Jantina ketua keluarga

☐ 1 - Lelaki ☐ 0 - Perempuan

2. Umur ketua keluarga
_____ tahun

3. Bangsa ketua keluarga

☐ 1 - Melayu
☐ 2 - Cina
☐ 3 - India
☐ 4 - Bumiputera bukan Melayu
☐ 5 - Lain - lain (nyatakan)
_____

4. Warganegara ketua keluarga

☐ 1 - Malaysia
☐ 2 - Penduduk tetap
☐ 3 - Rakyat asing (nyatakan negara asal) _____

5. Adakah ketua keluarga orang kurang upaya?

☐ 1 - Ya ☐ 0 - Tidak

6. Status perkahwinan ketua keluarga

☐ 1 - Belum pernah berkahwin
☐ 2 - Berkahwin
☐ 3 - Balu / Duda
☐ 4 - Bercerai
☐ 5 - Berpisah

7. Tahap pendidikan ketua keluarga

☐ 1 - Tidak bersekolah
☐ 2 - Sekolah rendah
☐ 3 - Sekolah menengah rendah (Tingkatan 1-3)
☐ 4 - Sekolah menengah tinggi (Tingkatan 4-5)
☐ 5 - Tingkatan 6 / A-level / Asasi
☐ 6 - Sijil (mesti melebihi 6 bulan)
☐ 7 - Diploma (mesti melebihi 6 bulan)
☐ 8 - Ijazah / Sarjana Muda
☐ 9 - Sarjana / Doktor Falsafah
☐ 10 - Lain-lain (nyatakan)
_____

NO. BORANG: ☐☐☐☐

A2. MAKLUMAT PEKERJAAN KETUA KELUARGA

1. Status pekerjaan ketua keluarga...

a) ...sekarang (perkerjaan terkini)?

☐ 1 - Bekerja dengan kerajaan
☐ 2 - Bekerja dengan swasta
☐ 3 - Bekerja sendiri
☐ 4 - Kerja sementara / sambilan
☐ 5 - Menganggur
☐ 6 - Suri rumah
☐ 7 - Bersara
☐ 8 - Sedang belajar
☐ 0 - Tidak bekerja

b) ...sebelum berpindah ke PPR sekarang?

☐ 1 - Bekerja dengan kerajaan
☐ 2 - Bekerja dengan swasta
☐ 3 - Bekerja sendiri
☐ 4 - Kerja sementara / sambilan
☐ 5 - Menganggur
☐ 6 - Suri rumah
☐ 7 - Bersara
☐ 8 - Sedang belajar
☐ 0 - Tidak bekerja

2. Di manakah tempat kerja ketua keluarga...

a) ...sekarang (tempat kerja terkini)?

Alamat : _____
_____
_____
Bandar / kawasan : _____
Poskod : _____ Negeri : _____

☐ 0 - Tidak berkenaan (menganggur, suri rumah, bersara dll.)

b) ...sebelum berpindah ke PPR sekarang?

Alamat : _____
_____
_____
Bandar / kawasan : _____
Poskod : _____ Negeri : _____

☐ 0 - Tidak berkenaan (menganggur, suri rumah, bersara dll.)

3. Berapakah pendapatan bulanan keseluruhan keluarga anda...

a) ...sekarang (pendapatan terkini)?

☐ 1 - Kurang dari RM580
☐ 2 - RM 580 - RM 930
☐ 3 - RM 931 - RM 1,499
☐ 4 - RM 1,500 - RM 1,999
☐ 5 - RM 2,000 - RM 2,499
☐ 6 - RM 2,500 - RM 2,999
☐ 7 - RM 3,000 - RM 3,499
☐ 8 - RM 3,500 - RM 3,999
☐ 9 - RM 4,000 dan ke atas

b) ...sebelum berpindah ke PPR sekarang?

☐ 1 - Kurang dari RM580
☐ 2 - RM 580 - RM 930
☐ 3 - RM 931 - RM 1,499
☐ 4 - RM 1,500 - RM 1,999
☐ 5 - RM 2,000 - RM 2,499
☐ 6 - RM 2,500 - RM 2,999
☐ 7 - RM 3,000 - RM 3,499
☐ 8 - RM 3,500 - RM 3,999
☐ 9 - RM 4,000 dan ke atas

NO. BORANG:

A3. MAKLUMAT ASAS MENGENAI KELUARGA (SAMBUNG)

Bil	Nama ahli keluarga	Hubungan dengan ketua keluarga Contoh jawapan: ▪ Ketua keluarga ▪ Isteri ▪ Suami ▪ Anak lelaki ▪ Anak perempuan ▪ Bapa ▪ Ibu ▪ Saudara - mara ▪ Lain - lain (nyatakan)	Umur	Tahap pendidikan tertinggi Contoh jawapan: ▪ Tidak bersekolah ▪ Pra sekolah ▪ Sekolah rendah ▪ Sekolah menengah rendah (Tingkatan 1-3) ▪ Sekolah menengah tinggi (Tingkatan 4-5) ▪ Tingkatan 6 / A-level / Asasi ▪ Sijil (mesti melebihi 6 bulan) ▪ Diploma (mesti melebihi 6 bulan) ▪ Ijazah / Sarjana Muda ▪ Sarjana / Doktor Falsafah ▪ Lain-lain (nyatakan)	Status pekerjaan Contoh jawapan: ▪ Bekerja dengan kerajaan ▪ Bekerja dengan swasta ▪ Bekerja sendiri ▪ Kerja sementara / sambilan ▪ Menganggur ▪ Suri rumah ▪ Bersara ▪ Sedang belajar ▪ Tidak bekerja ▪ Tidak berkenaan	Status OKU ▪ Ya ▪ Tidak
5						
6						
7						
8						
9						
10						

NO. BORANG:

A3. MAKLUMAT ASAS MENGENAI KELUARGA

1. Nyatakan bilangan orang di dalam rumah anda (termasuk diri sendiri).

_____ orang

2. Sila isi jadual di bawah. Jika anda tinggal bersendirian, sila biarkan kosong.

JADUAL MAKLUMAT KELUARGA

Bil	Nama ahli keluarga	Hubungan dengan ketua keluarga Contoh jawapan: ▪ Ketua keluarga ▪ Isteri ▪ Suami ▪ Anak lelaki ▪ Anak perempuan ▪ Bapa ▪ Ibu ▪ Saudara - mara ▪ Lain - lain (nyatakan)	Umur	Tahap pendidikan tertinggi Contoh jawapan: ▪ Tidak bersekolah ▪ Pra sekolah ▪ Sekolah rendah ▪ Sekolah menengah rendah (Tingkatan 1-3) ▪ Sekolah menengah tinggi (Tingkatan 4-5) ▪ Tingkatan 6 / A-level / Asasi ▪ Sijil (mesti melebihi 6 bulan) ▪ Diploma (mesti melebihi 6 bulan) ▪ Ijazah / Sarjana Muda ▪ Sarjana / Doktor Falsafah ▪ Lain-lain (nyatakan)	Status pekerjaan Contoh jawapan: ▪ Bekerja dengan kerajaan ▪ Bekerja dengan swasta ▪ Bekerja sendiri ▪ Kerja sementara / sambilan ▪ Menganggur ▪ Suri rumah ▪ Bersara ▪ Sedang belajar ▪ Tidak bekerja ▪ Tidak berkenaan	Status OKU ▪ Ya ▪ Tidak
Cth	*Siti Aminah*	*Isteri*	*45*	*Ijazah*	*Suri rumah*	*Tidak*
1						
2						
3						
4						

NO. BORANG: ☐☐☐☐

A4. MAKLUMAT PERSEKOLAHAN ANAK - ANAK

1. Bilakah anda mula menetap di PPR ini? (contoh: 2005)

_____

2. Sila isi maklumat persekolahan anak anda di jadual di bawah (termasuk yang tidak lagi bersekolah seperti yang sudah bekerja, menganggur, suri rumah dan tidak bekerja). Biarkan kosong jika tidak berkenaan.

- Jika sekolah sebelum berpindah adalah sama dengan sekolah sekarang, tulis "sama".
- Jika anak anda tidak bersekolah, tulis "tidak bersekolah".

No	Nama anak	Nama tadika / sekolah / kolej sekarang (2017)	Nama tadika / sekolah / kolej sebelum berpindah ke PPR	Nama tadika / sekolah / kolej selepas berpindah ke PPR
Contoh 1	*Siti Ani*	*Universiti Malaya*	*SMK Bunga Raya*	*Sama*
Contoh 2	*Li Wei*	*SRK Abdul Talib*	*Tadika Melur*	*Tadika Aliff Ceria*
Contoh 3	*Isaac*	*Tidak bersekolah*	*St George Primary School*	*St Bernards Primary School*
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

NO. BORANG: ☐☐☐☐

A5. MAKLUMAT TEMPAT KEDIAMAN

Sila isikan maklumat mengenai tempat kediaman anda dan tandakan (√) pada petak yang berkenaan.

1. Di manakah tempat tinggal anda sebelum berpindah ke PPR sekarang?
   - ☐ 1 - Rumah sendiri
   - ☐ 2 - Rumah ahli keluarga (ibu bapa, saudara)
   - ☐ 3 - Rumah sewa
   - ☐ 4 - Lain - lain (nyatakan)

     _____

2. Apakah jenis tempat tinggal anda sebelum berpindah ke PPR sekarang?
   - ☐ 1 - Sesebuah
   - ☐ 2 - Berkembar
   - ☐ 3 - Teres / Rangkai
   - ☐ 4 - Berkelompok
   - ☐ 5 - Rumah bandar
   - ☐ 6 - Rumah kedai / Pejabat
   - ☐ 7 - Rumah pangsa / Flat
   - ☐ 8 - Apartmen / Kondominium
   - ☐ 9 - Rumah panjang
   - ☐ 10 - Rumah setinggan
   - ☐ 11 - Lain - lain (nyatakan)

     _____

3. Adakah tempat tinggal yang diduduki sebelum berpindah lebih besar atau lebih kecil dari rumah PPR sekarang?
   - ☐ 1 - Tempat tinggal lama lebih besar
   - ☐ 2 - Lebih kurang sama saiz
   - ☐ 3 - Tempat tinggal lama lebih kecil

4. Di manakah tempat tinggal tersebut?

   Alamat : _____

   _____

   _____

   Bandar / kawasan : _____

   Poskod : _____ Negeri : _____

5. Apakah sebab anda berpindah ke PPR sekarang?
   - ☐ 1 - Diarah berpindah kerana kawasan asal diambil balik untuk pembangunan baru
   - ☐ 2 - Berhijrah dari luar bandar
   - ☐ 3 - Penempatan mangsa bencana alam (kebakaran, banjir, rumah tidak selamat)
   - ☐ 4 - Lain - lain (nyatakan)

     _____

     _____

6. Adakah anda memiliki PPR yang didiami sekarang?
   - ☐ 1 - Ya. Saya adalah pemilik
   - ☐ 0 - Tidak. Saya sedang menyewa

7. Jika tidak…

   a) …kini anda menyewa daripada…
   - ☐ 0 - Majlis Bandaraya (DBKL / MBPP)
   - ☐ 1 - Menyewa dari orang ketiga

   b) …adakah anda berminat untuk membeli unit yang diduduki sekarang?
   - ☐ 1 - Ya
   - ☐ 0 - Tidak

8. Adakah anda memiliki kenderaan?
   - ☐ 1 - Ya
   - ☐ 0 - Tidak

9. Jika ya, nyatakan bilangan kenderaan yang dimiliki keluarga

Jenis kenderaan	Bilangan
1) Kereta	_____
2) Motosikal	_____
3) Van	_____
4) Lori	_____

NO. BORANG:

BAHAGIAN B: KEPUASAN KELUARGA

B1. UNIT KEDIAMAN

Bil	Kenyataan	Tahap kepuasan keluarga						
		Sangat tidak memuaskan	Tidak memuaskan	Kurang memuaskan	Sederhana	Agak memuaskan	Memuaskan	Sangat memuaskan
1	Kualiti rumah secara keseluruhan	1	2	3	4	5	6	7
2	Keluasan rumah secara keseluruhan	1	2	3	4	5	6	7
3	Reka bentuk rumah secara keseluruhan	1	2	3	4	5	6	7
4	Keluasan bilik tidur	1	2	3	4	5	6	7
5	Bilangan bilik tidur	1	2	3	4	5	6	7
6	Keluasan ruang tamu	1	2	3	4	5	6	7
7	Keluasan ruang makan	1	2	3	4	5	6	7
8	Keluasan dapur	1	2	3	4	5	6	7
9	Keluasan tempat ampaian	1	2	3	4	5	6	7
10	Keluasan bilik air	1	2	3	4	5	6	7
11	Bilangan bilik air	1	2	3	4	5	6	7
12	Keluasan tandas	1	2	3	4	5	6	7
13	Bilangan tandas	1	2	3	4	5	6	7
14	Kualiti dinding	1	2	3	4	5	6	7
15	Kualiti lantai	1	2	3	4	5	6	7
16	Bilangan soket elektrik	1	2	3	4	5	6	7
17	Bilangan tingkap	1	2	3	4	5	6	7
18	Keselesaan rumah secara keseluruhan	1	2	3	4	5	6	7
19	Udara keluar dan masuk dengan secukupnya di dalam rumah	1	2	3	4	5	6	7
20	Cahaya matahari yang secukupnya di dalam rumah	1	2	3	4	5	6	7
21	Tahap tekanan air di dalam rumah	1	2	3	4	5	6	7
22	Tiada bunyi bising di dalam / sekitar kawasan rumah	1	2	3	4	5	6	7
23	Tahap privasi di dalam / sekitar kawasan rumah	1	2	3	4	5	6	7
24	Tahap keselamatan di dalam / sekitar kawasan rumah	1	2	3	4	5	6	7
25	Tiada bau busuk di sekitar kawasan rumah	1	2	3	4	5	6	7

NO. BORANG:

B2. KOMPLEKS BANGUNAN KEDIAMAN

Bil	Kenyataan	Tahap kepuasan keluarga						
		Sangat tidak memuaskan	Tidak memuaskan	Kurang memuaskan	Sederhana	Agak memuaskan	Memuaskan	Sangat memuaskan
1	Kualiti bangunan blok PPR secara keseluruhan	1	2	3	4	5	6	7
2	Kebersihan bangunan blok PPR secara keseluruhan	1	2	3	4	5	6	7
3	Kualiti kemudahan yang disediakan secara keseluruhan	1	2	3	4	5	6	7
4	Bilangan lif	1	2	3	4	5	6	7
5	Keadaan lif	1	2	3	4	5	6	7
6	Keluasan tempat pembuangan sampah	1	2	3	4	5	6	7
7	Lokasi tempat pembuangan sampah	1	2	3	4	5	6	7
8	Bilangan dan lokasi alat pemadam api	1	2	3	4	5	6	7
9	Kualiti tangga di sekitar blok PPR	1	2	3	4	5	6	7
10	Kualiti koridor di sekitar blok PPR	1	2	3	4	5	6	7
11	Keadaan longkang di sekitar blok PPR	1	2	3	4	5	6	7
12	Keadaan railing / penghadang keselamatan di blok PPR	1	2	3	4	5	6	7
13	Tahap sekuriti di kawasan PPR secara keseluruhan	1	2	3	4	5	6	7
14	Tahap keselamatan di kawasan PPR secara keseluruhan	1	2	3	4	5	6	7

NO. BORANG: ☐☐☐☐

B2. KOMPLEKS BANGUNAN KEDIAMAN (SAMBUNG)

Bil	Kenyataan	Tahap kepuasan keluarga							
		Sangat tidak memuaskan	Tidak memuaskan	Kurang memuaskan	Sederhana	Agak memuaskan	Memuaskan	Sangat memuaskan	Tidak berkenaan
15	Keluasan dewan komuniti / umum	1	2	3	4	5	6	7	☐
16	Keadaan dewan komuniti / umum	1	2	3	4	5	6	7	☐
17	Keluasan surau	1	2	3	4	5	6	7	☐
18	Keadaan surau	1	2	3	4	5	6	7	☐
19	Keadaan taman permainan	1	2	3	4	5	6	7	☐
20	Bilangan tempat letak kenderaan	1	2	3	4	5	6	7	☐

B3. KEMUDAHAN DI KOMPLEKS KEDIAMAN

Bil	Kenyataan	Tahap kepuasan keluarga							
		Sangat tidak memuaskan	Tidak memuaskan	Kurang memuaskan	Sederhana	Agak memuaskan	Memuaskan	Sangat memuaskan	Tidak berkenaan
1	Adanya tadika di kawasan kompleks PPR	1	2	3	4	5	6	7	☐
2	Adanya kedai serbaguna di kawasan kompleks PPR	1	2	3	4	5	6	7	☐
3	Adanya pusat internet di kawasan kompleks PPR	1	2	3	4	5	6	7	☐
4	Adanya kedai makanan di kawasan kompleks PPR	1	2	3	4	5	6	7	☐

NO. BORANG: ☐☐☐☐

B4. LOKASI KEDIAMAN

Sila jawab soalan - soalan berikut dan tandakan (√) pada jawapan yang paling sesuai.

Bil	Kenyataan	Tahap kepuasan keluarga							
		Sangat tidak memuaskan	Tidak memuaskan	Kurang memuaskan	Sederhana	Agak memuaskan	Memuaskan	Sangat memuaskan	Tidak berkenaan
1	Jarak dari PPR ke tempat kerja	1	2	3	4	5	6	7	☐
2	Jarak dari PPR ke sekolah anak - anak	1	2	3	4	5	6	7	☐
3	Jarak dari PPR ke tadika anak- anak	1	2	3	4	5	6	7	☐
4	Jarak dari PPR ke taska / pusat asuhan anak- anak	1	2	3	4	5	6	7	☐

Nama taska / pusat: _____

Alamat: _____

5	Jarak dari PPR ke klinik perubatan	1	2	3	4	5	6	7	☐

Nama klinik: _____

Alamat: _____

Kekerapan pergi: _____ kali **SEMINGGU / SEBULAN / SETAHUN**

6	Jarak dari PPR ke hospital	1	2	3	4	5	6	7	☐

Nama hospital: _____

Alamat: _____

Kekerapan pergi: _____ kali **SEMINGGU / SEBULAN / SETAHUN**

7	Jarak dari PPR ke pasar raya / kedai runcit	1	2	3	4	5	6	7	☐

Nama kedai: _____

Alamat: _____

Kekerapan pergi: _____ kali **SEMINGGU / SEBULAN**

8	Jarak dari PPR ke pasar tani / pasar malam	1	2	3	4	5	6	7	☐

Nama pasar: _____

Alamat: _____

Kekerapan pergi: _____ kali **SEMINGGU / SEBULAN**

NO. BORANG: ☐☐☐☐

B4. LOKASI KEDIAMAN (SAMBUNG)

Sila jawab soalan - soalan berikut dan tandakan (√) pada jawapan yang paling sesuai.

Bil	Kenyataan	Tahap kepuasan keluarga: Sangat tidak memuaskan	Tidak memuaskan	Kurang memuaskan	Sederhana	Agak memuaskan	Memuaskan	Sangat memuaskan	Tidak berkenaan
9	Jarak dari PPR ke pusat membeli - belah	1	2	3	4	5	6	7	☐
	Nama pusat: _____								
	Alamat: _____								
	Kekerapan pergi: _____ kali **SEMINGGU / SEBULAN**								
10	Jarak dari PPR ke sistem pengangkutan awam (contoh: stesen bas, lrt, ktm)	1	2	3	4	5	6	7	☐
	Nama stesen: _____								
	Alamat: _____								
	Kekerapan pergi: _____ kali **SEMINGGU / SEBULAN**								
11	Jarak dari PPR ke tempat rekreasi	1	2	3	4	5	6	7	☐
	Nama tempat: _____								
	Alamat: _____								
	Kekerapan pergi: _____ kali **SEMINGGU / SEBULAN**								
12	Jarak dari PPR ke tempat beribadat	1	2	3	4	5	6	7	☐
	Nama tempat: _____								
	Alamat: _____								
	Kekerapan pergi: _____ kali **SEMINGGU / SEBULAN**								
13	Jarak dari PPR ke rumah rakan / ahli keluarga	1	2	3	4	5	6	7	☐
	Alamat: _____								
	Kekerapan pergi: _____ kali **SEBULAN**								

NO. BORANG: ☐☐☐☐

B5. TAHAP KEPUASAN KELUARGA SECARA KESELURUHAN

Sila jawab soalan - soalan berikut dan tandakan (√) pada jawapan yang paling sesuai.

1. Adakah anda puas hati dengan unit rumah yang disewa / dimiliki secara keseluruhan?
   - ☐ 1 - Sangat tidak puas hati
   - ☐ 2 - Tidak puas hati
   - ☐ 3 - Kurang puas hati
   - ☐ 4 - Sederhana
   - ☐ 5 - Agak puas hati
   - ☐ 6 - Puas hati
   - ☐ 7 - Sangat puas hati

2. Adakah anda puas hati dengan kemudahan yang disediakan di dalam kawasan PPR secara keseluruhan?
   - ☐ 1 - Sangat tidak puas hati
   - ☐ 2 - Tidak puas hati
   - ☐ 3 - Kurang puas hati
   - ☐ 4 - Sederhana
   - ☐ 5 - Agak puas hati
   - ☐ 6 - Puas hati
   - ☐ 7 - Sangat puas hati

3. Adakah anda puas hati dengan lokasi perumahan PPR secara keseluruhan?
   - ☐ 1 - Sangat tidak puas hati
   - ☐ 2 - Tidak puas hati
   - ☐ 3 - Kurang puas hati
   - ☐ 4 - Sederhana
   - ☐ 5 - Agak puas hati
   - ☐ 6 - Puas hati
   - ☐ 7 - Sangat puas hati

4. Adakah anda puas hati dengan keadaan PPR secara keseluruhan?
   - ☐ 1 - Sangat tidak puas hati
   - ☐ 2 - Tidak puas hati
   - ☐ 3 - Kurang puas hati
   - ☐ 4 - Sederhana
   - ☐ 5 - Agak puas hati
   - ☐ 6 - Puas hati
   - ☐ 7 - Sangat puas hati

5. Jika diberi peluang untuk berpindah ke projek perumahan kerajaan / swasta yang lain, adakah anda akan berpindah? (sila pilih satu jawapan sahaja)
   - ☐ 1 - Ya. Saya akan berpindah keluar dari PPR sedia ada
   - ☐ 2 - Mungkin. Bergantung kepada kadar sewa rumah yang ditawarkan
   - ☐ 3 - Mungkin. Bergantung kepada lokasi kawasan perumahan baru
   - ☐ 4 - Mungkin. Bergantung kepada keadaan / ciri - ciri rumah yang ditawarkan
   - ☐ 5 - Mungkin. Bergantung kepada siapa pentadbir perumahan
   - ☐ 6 - Mungkin. Bergantung kepada faktor lain (nyatakan) _____
   - ☐ 7 - Tidak. Saya tidak mahu berpindah dari PPR sedia ada

Apakah cadangan anda untuk menaikkan tahap kepuasan anda dengan keadaan PPR secara keseluruhan?

_____

_____

_____

BORANG TAMAT

APPENDIX C

COMMUNITY ENGAGEMENT QUESTIONNAIRE

Part A: Questionnaire on roles and responsibilities of Residents' Association and existing communities within the PPR

1) **Number of committee members**
   - **a)** How many members are there in the Residents' Association (overall)?
   - **b)** Is there an association for every PPR block? If there is, how many members are there for each association?
   - **c)** What is the ratio of number of committee members to number of residential units?

2) **Members selection process**
   - **a)** What are the selection criterias to be a Residents' Association member?
   - **b)** How long is the tenure of Residents' Association committee?
   - c) How many terms do they usually serve and what is the turnover rate (high or low)?

3) **Age composition**
   - a) What is the age composition of the Residents' Association members?
   - b) What is the ratio of young to old members in the committee?
   - c) Are the members active in the association?

4) **Key responsibilities**
   - a) What are the responsibilities / main roles of the Residents' Association?
   - b) How frequent are the meetings?
   - c) How do residents report their complaints / problems to the local council? Do the complaints have to go through the association or directly to the local council?
   - d) How does the Residents' Association address the problems / complaints?
   - e) Are the local councils/authorities responsive?
   - f) What is the expected time taken (by both parties) to solve the problems?

5) **Divisional responsibilities**
   - **a)** How many bureaus / divisions are there in the Residents' Association?
   - **b)** List the bureaus (e.g. treasury, cleanliness bureau, etc).
   - **c)** Are the bureaus active?
   - **d)** What are the responsibilities of each bureau?
   - **e)** What are the commonly organised activities to improve living conditions of the PPR?

6) **Common issues according to the Residents' Association**
   - a) What are the common issues faced in the PPR?
   - b) What are the steps taken to address the issues?

7) **Common issues based on the survey**

Examples:
- Pipe water leaking (e.g. water leakage, water seeping into house, unstable water supply
- Lift malfunctioning
- Lack of parking spaces
- Lack of amenities
- Poor sanitation and cleanliness
- Concerns on security
- Concerns on safety

Part B: Questionnaire on Operations and Maintenance of the PPR

1. General Questions

1. **Who is responsible for managing the facility and maintenance of the PPR complex?**
   Example: manage complaints, awarding tenders, recording cost and planning.

2. **What is the role of the Residents' Association in the management and maintenance of the PPR facilities?**
   Example: is the association an intermediary for complaints or inputs or residents communicate directly with the local council officer in-charge? Has there been discussions with the local council officials with respect to planned maintenance works? Is there any feedback from the residents pertaining to maintenance and restoration works?

3. **What other programmes were organised by the residents to ensure the PPR complex are safe, healthy and clean?**
   Example: Are there any weekly clean-up organised by the community or fundraising for repair?

4. **How do the Residents' Association ensure that residents' voices are heard in the event of problems with the facilities?**
   Example: carrying out petitions, sending letters to the authority responsible, demonstrations.

5. **Have the residents ever received feedback regarding quality of the facilities and structure of the PPR complex by local authority or professionals?**
   If yes, when and what is the quality of the facilities and structure from based on the feedback?

6. **Does the Residents' Association assess the buildings and facilities as safe, health-promoting and clean?**
   Is the state improving or remain unchanged?

7. **What improvements can be done in terms of management (i.e. by means of law enforcement and responsibilities of the local council) to ensure the safety, cleanliness and quality of the complex?**

2. Building operations

1. **How do residents file a report regarding issues related to the facility and structure of the complex?**
   Describe the above process, from filing a report to responses by the local authorities (as to what the association understands).

2. **Except for the officer in-charge of the PPR (*pegawai pelawat*), what other officials can be contacted?**

3. **Are the feedback and responses from the authorities satisfactory?**

4. **What are the frequently occurring issues pertaining to the complex facility that are reported to the Residents' Association?**

5. **What problem takes the most time to solve?**

3. Maintenance works

1. **Does the Residents' Association possess access to maintenance records of every PPR facility for future references?**
   If *yes*, please list (e.g. cleaning schedule, lift maintenance schedule).

2. **Does the association feel that the maintenance work for the facility is performed in accordance to schedule and priority?**
   Please explain if yes or no.

3. **How does the Residents' Association ensure that facility maintenance work is carried out according to schedule?**
   Do they need access to the building quality report or maintenance work report?

4. **How do residents feel about the workmanship of the maintenance / repair work conducted?**

5. **What do residents think about the methods of maintenance / repair / complaint channels present and how can they be improved?**

APPENDIX D

CALCULATING THE SATISFACTION INDEX

The satisfaction index adopted in this study is adapted from the relative satisfaction index and relative habitability index introduced by Onibokun[198]. The computation of the relative habitability index was based on the principle that the respondents' scores on the selected housing variables (denoted by the relative satisfaction index), considered together, signifies their overall satisfaction.

This study constructed several indices to measure the satisfaction levels of the different housing components. These indices are divided into two groups—unit and complex, with seven sub-indices under unit and six sub-indices under complex.

Calculating satisfaction sub-index

Equation D1 shows the formula used to calculate the satisfaction sub-index for a particular housing component. It is the sum of a respondent's actual score (on a seven-point scale) as a percentage of the maximum possible score.

Equation D1

$$SSc = \frac{\sum_{i=1}^{N} y^i}{\sum_{i=1}^{N} Y^i} x100$$

SS = satisfaction sub-index of a respondent
c = housing component (i.e. shared spaces, personal spaces, overcrowding)
N = number of variables being scaled under c
y^i = actual score by a respondent on the i^{th} variable
Y^i = maximum possible score that i could have on scale used

Calculating unit satisfaction index

Equation D2 shows the formula of unit satisfaction index, which is the sum of a respondent's actual score as a percentage of the maximum possible score on all the housing components of the unit. In other words, it is the sum of all the unit satisfaction sub-index which are: shared spaces (sha), personal spaces (per), overcrowding (ove), environmental physics (env), privacy (pri), safety (saf) and design (des).

Equation D2

$$USI = \frac{\sum_{i=1}^{N1} sha^i + \sum_{i=1}^{N2} per + \sum_{i=1}^{N3} ove + \sum_{i=1}^{N4} env + \sum_{i=1}^{N5} pri + \sum_{i=1}^{N6} saf + \sum_{i=1}^{N7} unitdes}{\sum_{i=1}^{N1} SHA + \sum_{i=1}^{N2} PER + \sum_{i=1}^{N3} OVE + \sum_{i=1}^{N4} ENV + \sum_{i=1}^{N5} PRI + \sum_{i=1}^{N6} SAF + \sum_{i=1}^{N7} DES} \; x\,100$$

USI = unit satisfaction index
N = number of variables being scaled under unit sub-index
sha, per, ove, env, pri, saf, des = actual score by a respondent on the i^{th} variable in the component
SHA, PER, OVE, ENV, PRI, SAF, DES = maximum possible score on the i^{th} variable in the component

[198] Onibokun (1976). Onibokun explained that what constitutes habitability varies.

Calculating complex satisfaction index

Equation D3 shows the formula of complex satisfaction index, which is the sum of a respondent's actual score as a percentage of the maximum possible score on all the housing components of the complex. It is the sum of all the unit satisfaction sub-index which are: building—floor-sensitive (sfl), building—non-floor sensitive (nfl), paid shared spaces (psh), free shared spaces (fsh), safety and security (saf), sanitation and cleanliness (san).

Equation D3

$$USI = \frac{\sum_{i=1}^{N1} sfl^{i} + \sum_{i=1}^{N2} nfl + \sum_{i=1}^{N3} psh + \sum_{i=1}^{N4} fsh + \sum_{i=1}^{N5} saf + \sum_{i=1}^{N6} san}{\sum_{i=1}^{N1} SFL + \sum_{i=1}^{N2} NFL + \sum_{i=1}^{N3} PSH + \sum_{i=1}^{N4} FSH + \sum_{i=1}^{N5} SAF + \sum_{i=1}^{N6} SAN} \; x\,100$$

USI = unit satisfaction index
N = number of variables being scaled under unit sub-index
sfl, nfl, psh, fsh, saf, san = actual score by a respondent on the i^{th} variable in the component
SFL, NFL, PSH, FSH, SAF, SAN = maximum possible score on the i^{th} variable in the component

APPENDIX E

REGRESSION ANALYSIS OF RESIDENTIAL SATISFACTION

Referring to Chapter 3, six multiple regression models were run to identify the effects of the predictive factors on residential satisfaction. The models were created to distinguish the roles of residential environment, density and individual factors in explaining the variance between unit satisfaction, complex satisfaction and overall satisfaction. Table E1 shows the regression results for the following models:

- Model (1a) tests the effect of residential environment of the unit on respondents' satisfaction with the unit.
- Model (1b) adds measures of density (i.e. household size, person-per-bedroom measure, population density per hectare and floor level).
- Model (1c) further controls for household socio-demographic factors (i.e. household income, presence of children, years living in the PPR, type of tenure, and presence of disabled household member) and previous housing experience (i.e. size of current unit compared to previous housing, displacement and type of previous residence).
- Models (2a, 2b and 2c) test the effects of the residential environment, measures of density and individual factors on respondents' satisfaction with the complex.
- Finally, Models (3a, 3b and 3c) test the effects of the residential environment, measures of density and individual factors on overall satisfaction.

To ensure the robustness of the findings, the same equation was estimated by conducting a mixed model (hierarchical linear model) to account for PPR-fixed effects (Table E2) and through an ordinal logistic regression (Table E3). The inclusion of PPR-fixed effects helps account for the possibility that contextual factors, such as the PPR in which respondents live, may influence their outcomes. In addition, the ordinal logistic regression was also conducted to test the findings given that the dependent variable is of an ordinal nature which could result in biases if estimated using OLS.

Table E1: Satisfaction with unit (Model 1a, 1b, 1c), satisfaction with complex (Model 2a, 2b, 2c) and overall satisfaction (Model 3a, 3b, 3c) (OLS)

	Model 1a	Model 1b	Model 1c	Model 2a	Model 2b	Model 2c	Model 3a	Model 3b	Model 3c
Dependent variables	Satisfaction with unit			Satisfaction with complex			Overall satisfaction		
Independent variables									
Residential environment									
Shared spaces	0.00909***	0.00901***	0.00913***				0.00882***	0.00867***	0.00876***
	(4.72)	(4.63)	(4.73)				(4.38)	(4.28)	(4.32)
Personal spaces	0.000213	0.000177	0.000127				-0.00425*	-0.00422*	-0.00399
	(0.10)	(0.09)	(0.06)				(-2.08)	(-2.07)	(-1.96)
Overcrowding	0.00589**	0.00593**	0.00537*				0.0000342	0.000153	-0.000348
	(2.82)	(2.83)	(2.56)				(0.02)	(0.07)	(-0.16)
Environmental physics	0.0187***	0.0186***	0.0180***				0.00779*	0.00812**	0.00773*
	(6.77)	(6.72)	(6.52)				(2.55)	(2.64)	(2.52)
Privacy	0.00171	0.00170	0.00176				0.00107	0.00105	0.00126
	(1.13)	(1.12)	(1.16)				(0.66)	(0.65)	(0.78)
Safety	0.00404**	0.00402**	0.00399**				0.00600***	0.00586***	0.00584***
	(3.11)	(3.09)	(3.07)				(4.08)	(3.99)	(3.98)
Design	0.0102***	0.0103***	0.0102***				0.00527*	0.00544*	0.00539*
	(4.32)	(4.34)	(4.30)				(2.11)	(2.18)	(2.16)
Building—Floor sensitive				0.0128***	0.0124***	0.0121***	-0.0000954	-0.000473	0.0000952
				(6.08)	(5.88)	(5.71)	(-0.05)	(-0.25)	(0.05)
Building—Non-floor sensitive				0.00426*	0.00407*	0.00415*	0.000845	0.000696	0.000358
				(2.08)	(1.98)	(2.02)	(0.43)	(0.35)	(0.18)
Paid shared spaces				0.00940***	0.00899***	0.00901***	0.00737***	0.00701***	0.00709***
				(5.58)	(5.32)	(5.32)	(4.58)	(4.35)	(4.41)
Free shared spaces				0.00866***	0.00873***	0.00838***	0.00221	0.00226	0.00220
				(6.04)	(6.08)	(5.80)	(1.70)	(1.73)	(1.67)
Safety and security				0.00995***	0.0103***	0.0104***	0.00703***	0.00731***	0.00724***
				(6.96)	(7.12)	(7.15)	(5.03)	(5.18)	(5.13)
Sanitation and cleanliness				0.00992***	0.0101***	0.0102***	0.0162***	0.0162***	0.0160***
				(3.85)	(3.92)	(3.95)	(6.58)	(6.60)	(6.53)
Measures of density									
Household size		-0.0176	-0.0243		-0.0187	-0.0224		-0.0329*	-0.0338*
		(-1.33)	(-1.64)		(-1.29)	(-1.42)		(-2.45)	(-2.30)
1.person-per-bedroom		-0.0999	-0.0976		-0.157*	-0.149*		-0.140*	-0.145*
		(-1.59)	(-1.54)		(-2.28)	(-2.14)		(-2.17)	(-2.25)
Population density per hectare		-0.00224	-0.00416		-0.00892*	-0.0113*		-0.00739	-0.00758
		(-0.59)	(-1.00)		(-2.02)	(-2.35)		(-1.73)	(-1.66)
Floor level		0.00114	-0.000133		0.00389	0.00301		-0.00132	-0.00245
		(0.31)	(-0.04)		(0.93)	(0.71)		(-0.34)	(-0.63)
Individual factors									
1.household income ≤ RM1.5k			-0.0363			0.0546			-0.0345
			(-0.94)			(1.28)			(-0.87)
1.No presence of children = 1			-0.0332			-0.0583			0.0133
			(-0.78)			(-1.25)			(0.30)
1.living in PPR for 8 years or more = 1			0.00810			-0.0373			0.0443
			(0.18)			(-0.73)			(0.92)
1.renter-occupied = 1			0.0439			0.0448			0.0565
			(1.13)			(1.02)			(1.36)
1.no presence of disabled household member = 1			0.0159			0.0731			0.161*
			(0.26)			(1.14)			(2.52)
1.size of current unit is bigger = 1			0.169***			0.0237			0.0798*
			(4.61)			(0.56)			(2.03)
1.moved not due to forced relocation = 1			0.0869			0.0392			0.00359
			(1.91)			(0.76)			(0.08)
1.prior housing is landed = 1			-0.0375			-0.0241			-0.0567
			(-0.71)			(-0.42)			(-1.04)
Constant	1.772***	1.956***	2.001***	1.293***	1.615***	1.621***	1.078***	1.459***	1.282***
	(16.42)	(12.24)	(11.18)	(12.62)	(9.55)	(8.34)	(9.62)	(8.81)	(6.98)
R-sq	0.309	0.310	0.316	0.338	0.340	0.342	0.383	0.385	0.388

Note: All models were run with 3,323 respondents; all respondents who have non-missing scores on all variables used. T statistics are in parentheses.
*p , 0.05; **p , 0.01; ***p , 0.001

Table E2: Satisfaction with unit (Model 1a, 1b, 1c), satisfaction with complex (Model 2a, 2b, 2c) and overall satisfaction (Model 3a, 3b, 3c) (Hierarchical linear model)

	Model 1a	Model 1b	Model 1c	Model 2a	Model 2b	Model 2c	Model 3a	Model 3b	Model 3c
Dependent variables	Satisfaction with unit			Satisfaction with complex			Overall satisfaction		
Independent variables									
Residential environment									
Shared spaces	0.0086***	0.0085***	0.0086***				0.00848***	0.00829***	0.00840***
	(4.96)	(4.85)	(4.95)				(4.60)	(4.49)	(4.55)
Personal spaces	0.000284	0.000272	0.000259				-0.00394*	-0.00395*	-0.00371*
	(0.17)	(0.16)	(0.15)				(-2.23)	(-2.23)	(-2.10)
Overcrowding	0.00631***	0.00634***	0.00575**				0.000517	0.000538	0.00000568
	(3.43)	(3.44)	(3.12)				(0.27)	(0.28)	(0.00)
Environmental physics	0.0193***	0.0192***	0.0186***				0.00845**	0.00853**	0.00828**
	(7.91)	(7.86)	(7.61)				(3.18)	(3.21)	(3.11)
Privacy	0.00179	0.00180	0.00187				0.00113	0.00115	0.00138
	(1.33)	(1.34)	(1.39)				(0.80)	(0.81)	(0.97)
Safety	0.00351**	0.00351**	0.00347**				0.00565***	0.00564***	0.00559***
	(3.04)	(3.05)	(3.02)				(4.36)	(4.35)	(4.32)
Design	0.00965***	0.00972***	0.00974***				0.00531*	0.00544*	0.00536*
	(4.70)	(4.72)	(4.74)				(2.45)	(2.51)	(2.47)
Building—Floor sensitive				0.0102***	0.0102***	0.00996***	-0.000180	-0.000312	0.0000693
				(5.23)	(5.27)	(5.12)	(-0.10)	(-0.17)	(0.04)
Building—Non-floor sensitive				0.00541**	0.00536**	0.00547**	0.000897	0.000863	0.000552
				(3.04)	(3.01)	(3.07)	(0.53)	(0.51)	(0.33)
Paid shared spaces				0.00791***	0.00776***	0.00777***	0.00668***	0.00657***	0.00666***
				(5.67)	(5.56)	(5.57)	(5.00)	(4.91)	(4.98)
Free shared spaces				0.00831***	0.00822***	0.00802***	0.00245*	0.00240*	0.00231
				(6.44)	(6.38)	(6.20)	(2.02)	(1.98)	(1.90)
Safety and security				0.00863***	0.00867***	0.00849***	0.00668***	0.00680***	0.00670***
				(6.93)	(6.94)	(6.81)	(5.32)	(5.38)	(5.32)
Sanitation and cleanliness				0.0110***	0.0109***	0.0109***	0.0159***	0.0159***	0.0157***
				(5.14)	(5.09)	(5.08)	(7.70)	(7.68)	(7.63)
Measures of density									
Household size		-0.0173	-0.0242		-0.0172	-0.0227		-0.0315*	-0.0321*
		(-1.32)	(-1.69)		(-1.17)	(-1.42)		(-2.29)	(-2.14)
1.person-per-bedroom		-0.102	-0.0995		-0.172*	-0.161*		-0.142*	-0.145*
		(-1.65)	(-1.60)		(-2.49)	(-2.32)		(-2.18)	(-2.22)
Population density per hectare		0.000808	-0.00187		-0.00134	-0.00546		-0.00576	-0.00695
		(0.12)	(-0.29)		(-0.11)	(-0.41)		(-1.02)	(-1.15)
Floor level		0.000410	-0.000817		0.00181	0.000829		-0.00169	-0.00291
		(0.11)	(-0.22)		(0.44)	(0.20)		(-0.44)	(-0.75)
Individual factors									
1.household income ≤ RM1.5k			-0.0381			0.0593			-0.0288
			(-1.01)			(1.41)			(-0.73)
1.No presence of children = 1			-0.0340			-0.0717			0.0139
			(-0.83)			(-1.57)			(0.32)
1.living in PPR for 8 years or more = 1			0.0208			-0.00274			0.0533
			(0.46)			(-0.05)			(1.12)
1.renter-occupied = 1			0.0657			0.129**			0.0846*
			(1.62)			(2.84)			(2.00)
1.no presence of disabled household member = 1			0.0182			0.0778			0.157**
			(0.32)			(1.22)			(2.61)
1.size of current unit is bigger = 1			0.159***			0.00137			0.0719
			(4.32)			(0.03)			(1.87)
1.moved not due to forced relocation = 1			0.0854			0.0396			0.0155
			(1.85)			(0.76)			(0.32)
1.prior housing is landed = 1			-0.0353			-0.0311			-0.0538
			(-0.70)			(-0.55)			(-1.01)
Constant	1.773***	1.926***	1.957***	1.480***	1.716***	1.688***	1.071***	1.438***	1.251***
	(17.68)	(11.10)	(10.40)	(11.99)	(6.65)	(6.04)	(9.66)	(8.17)	(6.33)
ICC	0.0056284	0.0057229	0.0047374	0.0220795	0.0222985	0.023924	0.0035452	0.0026752	0.0029112

Note: All models were run with 3,323 respondents; all respondents who have non-missing scores on all variables used. T statistics are in parentheses. ICC = intraclass correlation coefficient
*p , 0.05; **p , 0.01; ***p , 0.001

Table E3: Satisfaction with unit (Model 1a, 1b, 1c), satisfaction with complex (Model 2a, 2b, 2c) and overall satisfaction (Model 3a, 3b, 3c) (Ordinal Logistic Regression)

	Model 1a	Model 1b	Model 1c	Model 2a	Model 2b	Model 2c	Model 3a	Model 3b	Model 3c
Dependent variables	**Satisfaction with unit**			**Satisfaction with complex**			**Overall satisfaction**		
Residential environment									
Shared spaces	0.0151***	0.0152***	0.0157***				0.0146***	0.0145***	0.0148***
	(4.25)	(4.27)	(4.41)				(4.16)	(4.11)	(4.18)
Personal spaces	0.00303	0.00299	0.00257				-0.00476	-0.00482	-0.00458
	(0.84)	(0.83)	(0.71)				(-1.32)	(-1.34)	(-1.28)
Overcrowding	0.0152***	0.0154***	0.0147***				0.00208	0.00238	0.00150
	(3.97)	(4.00)	(3.79)				(0.54)	(0.62)	(0.39)
Environmental physics	0.0375***	0.0374***	0.0367***				0.0140**	0.0147**	0.0141**
	(7.41)	(7.38)	(7.24)				(2.62)	(2.74)	(2.61)
Privacy	0.00485	0.00483	0.00481				0.00160	0.00160	0.00183
	(1.78)	(1.77)	(1.75)				(0.56)	(0.56)	(0.63)
Safety	0.00686**	0.00689**	0.00675**				0.0112***	0.0110***	0.0111***
	(2.82)	(2.82)	(2.75)				(4.34)	(4.27)	(4.29)
Design	0.0219***	0.0217***	0.0215***				0.0101*	0.0102*	0.0101*
	(5.04)	(4.98)	(4.91)				(2.32)	(2.35)	(2.32)
Building—Floor sensitive				0.0202***	0.0198***	0.0193***	0.000342	-0.000403	0.000525
				(5.96)	(5.79)	(5.63)	(0.10)	(-0.12)	(0.16)
Building—Non-floor				0.00737*	0.00726*	0.00725*	0.00193	0.00167	0.000916
sensitive				(2.19)	(2.14)	(2.13)	(0.53)	(0.46)	(0.25)
Paid shared spaces				0.0164***	0.0159***	0.0159***	0.0127***	0.0122***	0.0122***
				(5.94)	(5.75)	(5.75)	(4.63)	(4.41)	(4.43)
Free shared spaces				0.0147***	0.0147***	0.0142***	0.00405	0.00403	0.00404
				(6.23)	(6.24)	(5.96)	(1.75)	(1.73)	(1.71)
Safety and security				0.0166***	0.0170***	0.0170***	0.0123***	0.0128***	0.0127***
				(6.94)	(6.98)	(6.98)	(4.84)	(4.99)	(4.97)
Sanitation and cleanliness				0.0204***	0.0205***	0.0207***	0.0307***	0.0308***	0.0306***
				(4.99)	(5.01)	(5.04)	(7.08)	(7.11)	(7.05)
Measures of density									
Household size		0.00321	-0.00820		-0.0209	-0.0278		-0.0400	-0.0469
		(0.14)	(-0.32)		(-0.90)	(-1.09)		(-1.69)	(-1.82)
1.person-per-bedroom		-0.0601	-0.0451		-0.180	-0.169		-0.188	-0.196
		(-0.53)	(-0.39)		(-1.65)	(-1.53)		(-1.66)	(-1.72)
Population density per		-0.00223	-0.00733		-0.00931	-0.0135		-0.0108	-0.0107
hectare		(-0.31)	(-0.93)		(-1.28)	(-1.71)		(-1.39)	(-1.29)
Floor level		-0.00207	-0.00326		0.00453	0.00314		-0.00619	-0.00773
		(-0.31)	(-0.48)		(0.67)	(0.46)		(-0.90)	(-1.12)
Individual factors									
1.household income ≤			-0.0381			0.0597			-0.0688
RM1.5k			(-0.55)			(0.87)			(-0.99)
1.No presence of			-0.0566			-0.0832			-0.00762
children = 1			(-0.74)			(-1.12)			(-0.10)
1.living in PPR for 8 years			0.0185			-0.0771			0.0712
or more = 1			(0.22)			(-0.95)			(0.86)
1.renter-occupied = 1			0.126			0.103			0.0996
			(1.79)			(1.47)			(1.38)
1.no presence of disabled			-0.0727			0.0725			0.217*
household member = 1			(-0.64)			(0.69)			(1.98)
1.size of current unit is			0.353***			0.0679			0.198**
bigger = 1			(5.14)			(1.00)			(2.86)
1.moved not due to forced			0.124			0.0682			-0.0284
relocation = 1			(1.44)			(0.81)			(-0.34)
1.prior housing is			-0.0711			-0.0779			-0.115
landed = 1			(-0.73)			(-0.83)			(-1.22)
Constant cut1	1.696***	1.618***	1.494***	1.413***	1.059***	0.999**	1.944***	1.407***	1.612***
	(7.41)	(5.22)	(4.30)	(7.55)	(3.72)	(3.07)	(8.26)	(4.37)	(4.59)
Constant cut2	2.635***	2.558***	2.436***	2.582***	2.229***	2.170***	3.347***	2.810***	3.017***
	(12.43)	(8.60)	(7.24)	(14.60)	(8.04)	(6.83)	(15.45)	(9.09)	(8.86)
Constant cut 3	3.924***	3.847***	3.728***	3.947***	3.595***	3.538***	4.693***	4.157***	4.368***
	(18.70)	(12.79)	(10.99)	(21.65)	(12.68)	(10.97)	(21.40)	(13.35)	(12.79)
Constant cut4	5.790***	5.714***	5.602***	5.511***	5.161***	5.107***	6.479***	5.946***	6.165***
	(25.38)	(18.12)	(15.93)	(28.06)	(17.62)	(15.45)	(27.57)	(18.42)	(17.56)
Constant cut5	7.328***	7.252***	7.148***	6.793***	6.444***	6.393***	7.907***	7.377***	7.602***
	(29.83)	(22.05)	(19.67)	(32.34)	(21.30)	(18.86)	(31.55)	(22.04)	(21.01)
Constant cut6	10.23***	10.16***	10.08***	9.622***	9.272***	9.224***	10.77***	10.24***	10.47***
	(36.31)	(28.54)	(25.93)	(39.44)	(28.61)	(25.77)	(37.62)	(28.48)	(27.17)

Note: All models were run with 3,323 respondents; all respondents who have non-missing scores on all variables used. T statistics are in parentheses.
*p , 0.05; **p , 0.01; ***p , 0.001

APPENDIX F

SPATIAL ANALYSIS: GEOCODING AND REGRESSION

Calculating distance

The 'Harvesine' formula is used to calculate the straight-line distance between two points. This can be described as follows[199]:

$$distance\ (km) = ACOS(COS(90 - Lat_1) * COS(90 - Lat_2) + SIN(90 - Lat_1) * SIN(90 - Lat_2) * COS(Long_1 - Long_2)) * 6371$$

where Lat and $Long$ are latitude and longitude in radians; $ACOS$ the arccosine function, COS the cosine, SIN the sine; and 6,371 the earth's mean radius in km

Geocoding locations: treatment and removal of non-specific addresses

Places frequented by respondents were reported as addresses. To convert these to latitudes and longitudes that could be mapped, all addresses were geocoded via Google's Geocoding API (Application Post Interface) post-interview. Further amendments were made for incorrect or inaccurate coordinates.

Treatment and removal of non-specific addresses

Where a specific lot-number and street address were not given by the respondent, a point that is considered the centre of a reported township or area is assigned, either automatically by the API or manually. Typically, Google's Geocoding API assigns this to be the point where a town's labelled is placed in Google Maps, rather than the centroid of the area.

However, if the mentioned area is too broad or not mentioned at all, such reported addresses were typically deemed too vague to be geocoded. In some cases, these observations were excluded from the analysis. Examples include: "Klang Valley", "*Tadika Kemas*" and "UiTM". There are cases where the reported area is broad but not excluded. These include mentions of just "Gombak", "Ampang", "Cheras" and "Old Klang Road", which are areas that span from Kuala Lumpur beyond to Selangor. In these cases, an assumption is made that the respondent was referring to a location within KL, particularly when regarding job locations or amenities such as supermarkets. This assumption narrows down the possible area to obtain coordinates within an acceptable margin of error, in which we rely on the Geocoding API to select a central point for inclusion in our analysis.

In other cases, some respondents reported more than one place for a given place type. In this case, we select the place that is furthest, to reflect the maximum distance a household is willing to travel.

[199] Burnside (2017)

Geocoding locations: exclusion of assumed non-daily commute based on distance

The intention of this study was to examine travel distances that PPR residents had to traverse on a daily/regular basis, particularly for jobs and schools. A challenge was faced as some respondents reported places of work and schools that were not necessarily commuted to on a daily basis, such as places in another country or a state in Malaysia far away. The inclusion of these places in the analysis would distort central-tendency calculations of distance travelled, especially with the mean. While the median was instead used, given that it is less susceptible to being skewed by large outliers, such observations were still excluded to further eliminate the possibility.

However, given the limitations of the survey, it cannot be known with certainty if a reported place was commuted to daily by a respondent. The solution adopted was to exclude places based on a certain distance threshold for jobs and schools. For schools specifically, information on whether a given school is a fully residential school was leveraged, where schools under such category were automatically excluded from the analysis. An alternative method would have been to exclude any workplaces or schools located in a different state. However, with the prevailing urban structure of conurbations, it is quite the norm for people to commute daily across state borders, at least where the five PPRs in the case study are located. For example, there are people who live in Selangor and commute daily for work in KL, as do those in the northern conurbation in Penang and surrounding states. In addition, Selangor is a relatively vast state with its borders stretching many kilometres away from Kuala Lumpur, as with Kedah away from Penang. Therefore, it would not be a realistic assumption, for example, that someone living in PPR Kerinchi commutes regularly to Sabak Bernam as this implies a straight-line distance of 100km, a distance above any that an average person would be willing to traverse. Given these reasons, the method of excluding observations based on a distance threshold was adopted, with the particular distance chosen described below along with the rationale behind it.

Distance to workplaces

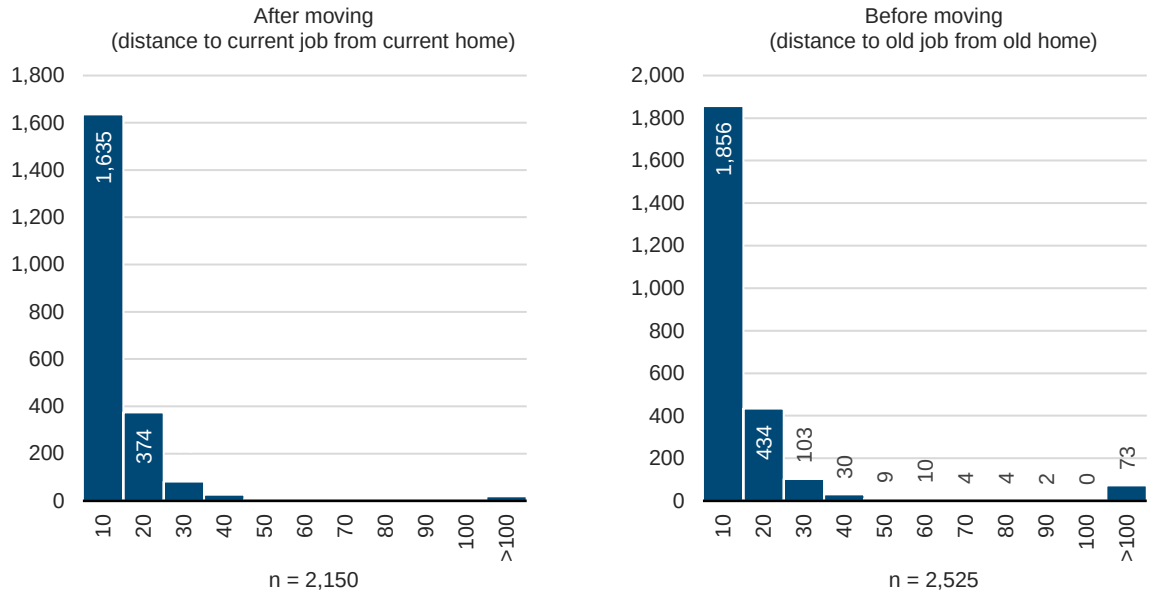
Studies have argued that commute since the dawn of human society is roughly half an hour per one-way trip[200]. Through innovations in transport, rather than reducing commute times, people have been willing to live further away from their jobs (and economic centres), which in turn have resulted in sprawling cities. But the dispersal model has become a victim of its success—as more and more need to travel, traffic has multiplied and commute times vary greatly across cities[201]. In addition, the finding that people commute half an hour is an average—communities who are either poor, marginalized, or live on the periphery are typically far from the "average" for any metric. While those in rural areas in Malaysia are likely to suffer from worst accessibility[202], those living in social housing in urban areas are undoubtedly still at the lower end of the socio-economic ladder. Thus, the focus must not be on studies that rely on single central tendency measures to describe the masses, but rather towards the tail-ends.

[200] Marchetti (1994), Zahavi et al. (1981)
[201] Rodrigue (2020)
[202] For example, the nearest government secondary school is farther than 9km to 41.2% of households in rural Sarawak and 24.3% in rural Sabah. In Kuala Lumpur and Putrajaya, nearly all households can reach a secondary government school within 5km. Source: DOS (2020b).

In Malaysia, no travel survey has been conducted to inform what's the furthest commute. Thus, the resort was to examining our urban spatial structure and the geographical extent of economic activity. Namely, the Kuala Lumpur conurbation reflects the interlink of economic activities across administrative boundaries of Kuala Lumpur, and thus the movement of the population across its geography for economic undertakings (i.e. jobs). The National Physical Plan 3 is the latest planning document and it describes the Kuala Lumpur Conurbation as encompassing the Federal territories of Kuala Lumpur and Putrajaya and part of Selangor, extending as far as the Sepang district[203]. Taking the north of the KL boundary to the end of Sepang district, gives a straight-line distance of 60km. Thus, following this, 60km is set as the maximum tolerable distance for workplaces, including for residents in PPR Jalan Sungai Pinang, as well as for residents in their prior homes and jobs. Therefore, any given work place that is beyond 60km is assumed as a non-daily commute and excluded from our analysis. While 60km may seem like a long distance for one-way travel on a daily basis, it is important not to set the threshold to low as that would result in much lower average distances.

A histogram of the distribution of observations by distances travelled (of all coordinates) shows that distance to jobs is heavily skewed to the bottom (Figure F1). Only a small number of heads of household travelled to work that is further than 100km after moving (19) and before moving (73), constituting 0.9% and 2.7% of heads of household, respectively. For heads of household travelling further than 60km, there are only 21 after moving and 83 before moving. If further than 70km, then no additional number of households are excluded for distance after moving, while only an additional 4 (0.2%) are excluded for distances before moving. If further than 80km, only an additional 1 household is excluded after and only 4 before. If further than 90km, then the additional number excluded is 0 after and 2 before. This shows that setting the threshold anywhere between 50 to 100 does not exclude or include a significant number of households.

Figure F1: Number of household heads by distance to jobs



Note: X axis value describes the ceiling of the range

[203] It also includes the district of Klang, Petaling, Gombak, Hulu Langat, Kuala Langat. Source: KPKT (2016)

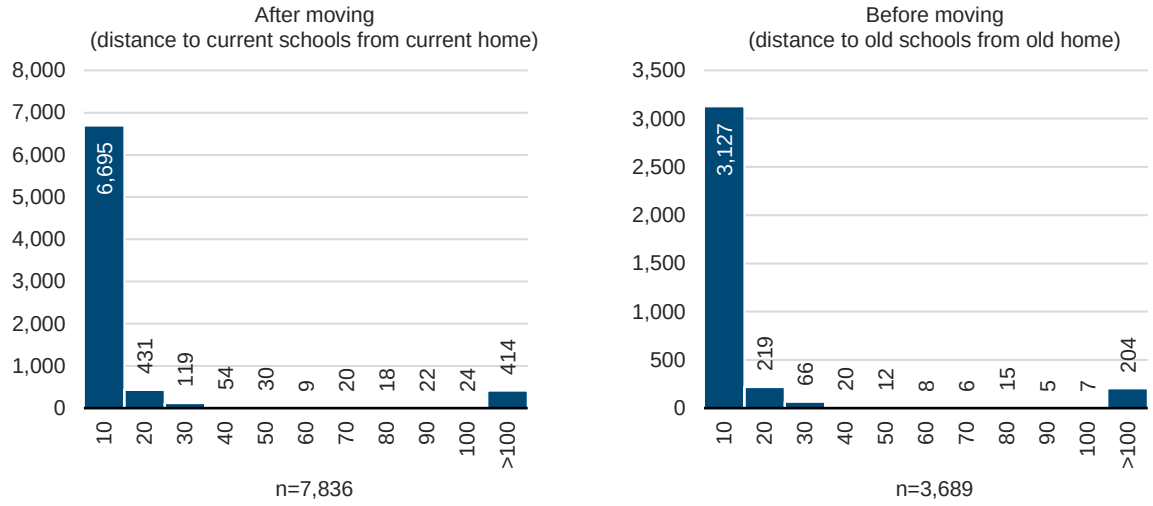
Distances to schools

The same argument can be made about the inability to rely on averages on commute time to work to inform a threshold for travel to schools, as different societies and sub-groups see different averages. In the US for example, while average commute time is 18 minutes for teenagers (between 15 – 19 years), a very small percentage endure commutes of greater than an hour[204]. In another study, travel times are found to vary more by grade within a city than across cities—ninth graders travel further than sixth graders, who travel further than kindergarteners[205]. The distribution is widest for ninth graders in New York City where 10% travel at least 36 minutes to school, the furthest than any 90th percentile of children in any group or city. In the UK, average commute time for primary school children is shorter than secondary school students at 13 minutes vs 25 minutes (or 1.6 miles vs 3.4 miles)[206]. The same UK study also show that that travel for education is shorter than travel to work—travel to work was nearly three times further than to school in both 1995/97 and 2014[207]

While no such studies exist in Malaysia, it is likely that a similarly level of variability between travel distance/time to school, as illustrated in other countries, exist across children attending different schools throughout Malaysia. In addition, the finding that travel to schools is of a shorter distance than to work is likely to be true on average in Malaysia too. Thus, these two findings suggest that the maximum distance children would travel to school in Malaysia (and therefore the cut-off threshold), is likely to be less than the tolerable commute to work, while varying across school types.

A histogram of distances to schools (of all coordinates) shows that distance to schools is heavily skewed to the bottom, particularly under 10km (Figure F2). Not many children travel to school between 50 – 100km, while a considerable number do go to schools further than 100km. Breaking down the numbers to differentiate school types shows that children attending post-secondary education traveled further distances (Figure F3).

Figure F2: Number of children by distance to schools

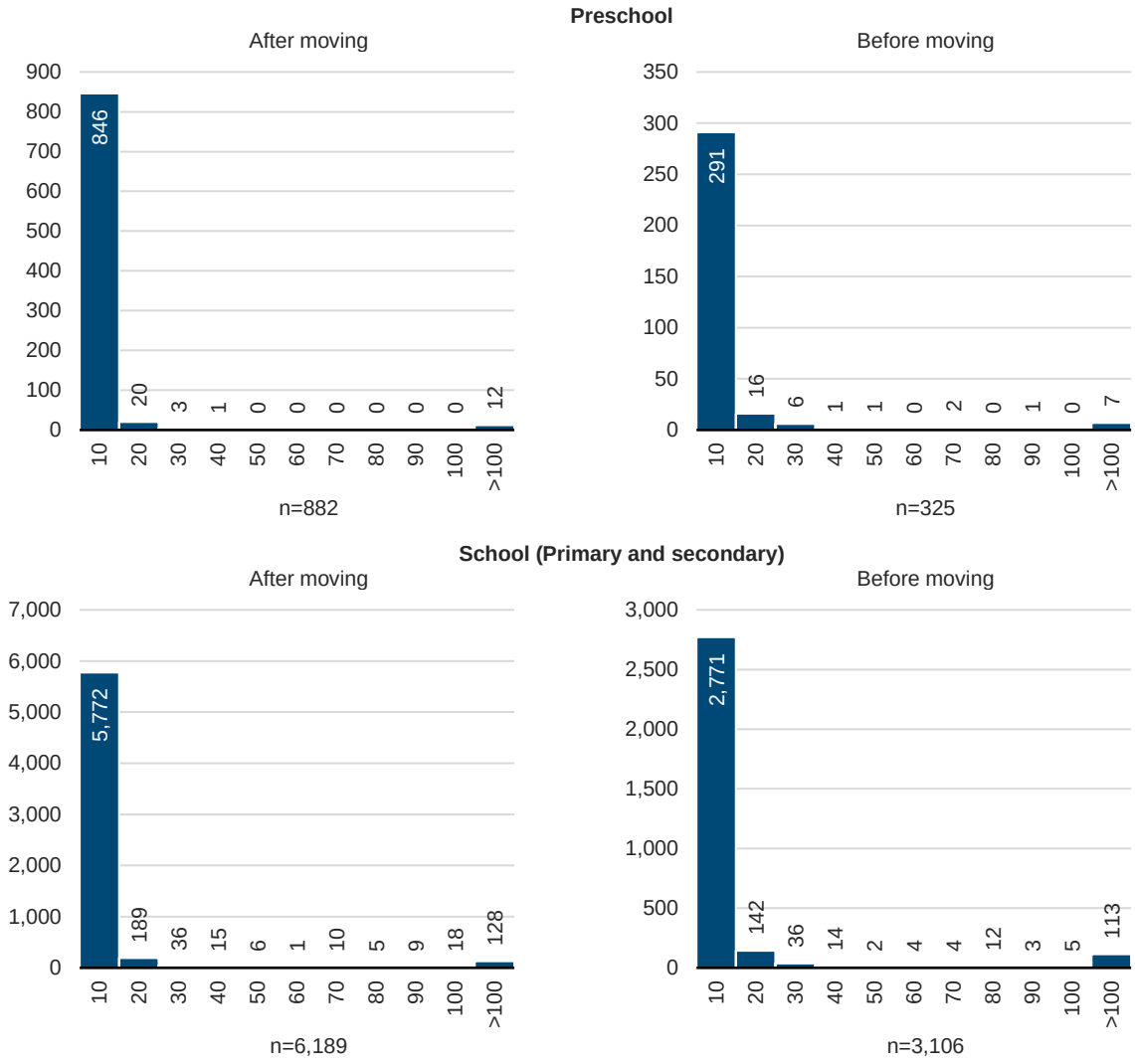


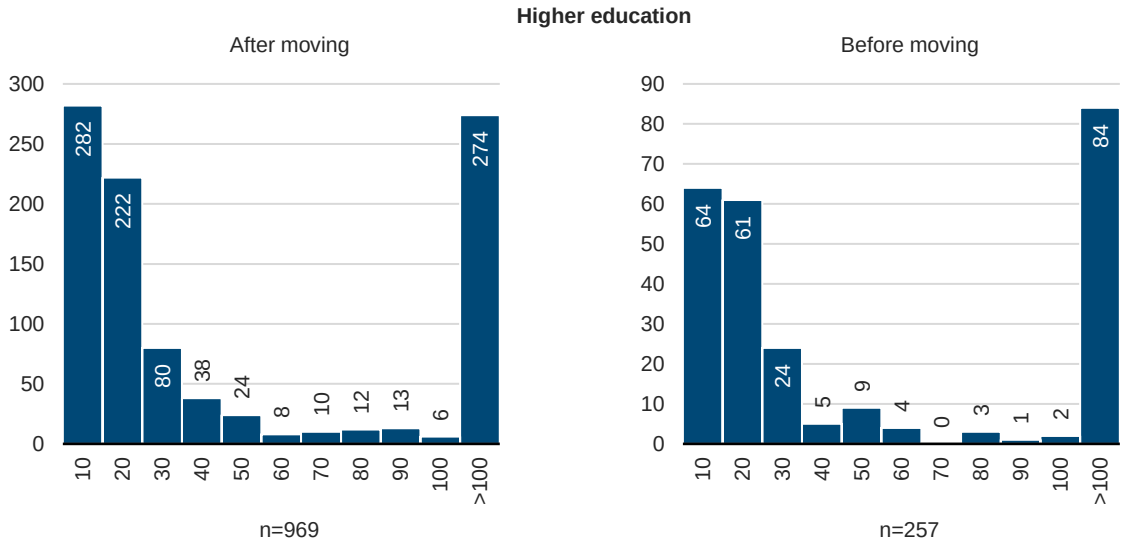
Note: X axis value describes the ceiling of the range

[204] Voulgaris et al. (2019)
[205] Urban Institute (2018)
[206] Tranter and Gd (2015), Department for Transport (2015a)
[207] Department for Transport (2015b)

Based on the finding that students in post-secondary education travel further, two distance thresholds are selected. For preschools and schools, 30km was chosen as it is is precisely half the threshold for travel to work, a more conservative share than the the average share of a third found in the UK. No further variability is chosen between preschools, primary schools and secondary schools as there is not much basis to a select a set km difference. For post-secondary education institutions, 60km was chosen, which is is equivalent to the threshold for travel to work and not less given there no basis can be found to select a fraction of the threshold for work.

Figure F3: Number of children by distance to schools, by school type





Note: X axis value describes the ceiling of the range

Regression analysis

To examine the determinants of each place's satisfaction level, the effects of the distance (to the respective place) is tested. The general hypothesis is that the greater the distance needed to travel to a particular place, the less satisfied one would be with accessibility to that place. Additionally, it is also important that the effects of distance alone are isolated for an accurate estimate, by controlling for other factors that are likely to influence one's satisfaction with a place. Factors that are likely to come to play are past locational experiences as well as individual and household socio-economic characteristics. This is because locational preferences may vary[208], and that one does not evaluate their homes based on actual conditions alone but also according to their aspirations and past experiences[209], as we have highlighted earlier in explaining on overall satisfaction with PPRs.

The model can be described by the following equation:

$$Satisfaction_{p,i} = b_o + b_1 distance_{p,i} + controls$$

Where $Satisfaction_{p,i}$ is the satisfaction level of a respondent with place p and $distance_{p,i}$ is the distance in km taken to place p.

This equation is estimated through OLS. For past locational experiences, particularly for satisfaction with access to jobs and schools, we included characteristics associated with past job and school experiences. For jobs, this includes the distance of the head of household's previous job (before moving to the PPR) from their previous homes, as well as whether or not the head of household changed their job. As with for schools, the previous distances to schools were included along with whether or not at least one child changed their schools (for reasons other than promotion).

[208] De Jong (1977)
[209] Galster (1987)

All distance variables are estimated in natural log form to ensure that their effects on satisfaction are linear. The presence of heteroskedasticity was addressed by the use of robust standard errors, while the variance inflation factor (VIF) indicates the absence of multicollinearity between independent variables.

The results of the regression without controls are illustrated in Table F1, while Table F2 includes the controls.

For further robustness checks, the same equation was estimated by including PPR-fixed effects (Table F3) and through an ordinal logistic regression (Table F4). The former was to account for the possibility that the outcomes of each respondent are associated by their contexts, particularly with regards to which PPR they reside in. This may be important in the context of spatial analysis as measuring distances, especially in Euclidian terms, may not reflect the entirety of the ease of access. Actual routes taken may be longer, involve more traffic and with varying terrain that may be more challenging. For example, given that PPR Salak Selatan is located on a hill, walkability may be negatively impacted even if distances are short. Meanwhile, the latter approach of performing the ordinal logistic regression was a more conservative method that addresses the fact that the dependent variable is ordinal in nature, which potentially could have resulted in biases when estimated through OLS. The results of both models illustrate a consistent association between distances and satisfaction, with some variation in the significance of the variables related to past locational experience and socio-economic characteristics.

Table F1: Regression results on determinants of satisfaction with accessibility to places without control variables (OLS)

	Dependent variable: Satisfaction with accessibility to…											
	Job	School	Childcare	Clinic	Hospital	Store	Market	Shopping	Station	Recreation	Worship	Friends
Ln distance [a]	-0.310***	-0.214***	-0.275***	-0.161***	-0.368***	-0.141***	-0.269***	-0.229***	-0.205***	-0.034	-0.277***	-0.370***
	(0.028)	(0.038)	(0.046)	(0.017)	(0.037)	(0.018)	(0.024)	(0.020)	(0.036)	(0.063)	(0.018)	(0.025)
Constant	5.424***	5.449***	5.222***	5.293***	5.479***	5.337***	5.286***	5.439***	5.060***	5.154***	5.390***	5.488***
	(0.050)	(0.043)	(0.094)	(0.022)	(0.053)	(0.032)	(0.032)	(0.022)	(0.033)	(0.068)	(0.036)	(0.046)
Observations	1,918	1,136	228	3,262	3,067	2,179	2,701	2,961	2,120	1,359	2,074	1,728
R-squared	0.06	0.03	0.13	0.03	0.03	0.03	0.05	0.04	0.02	0.00	0.13	0.13

Note: *** p<0.01, ** p<0.05, * p<0.1

a—For schools, the average distance to all schools per respondent is used

Distance and frequency variables expressed in natural log form. Robust standard errors in parentheses

Orange shading highlights negative coefficients that are statistically significant.

Table F2: Regression results on determinants of satisfaction with accessibility to places with control variables (OLS)

	Dependent variable: Satisfaction with accessibility to…											
	Job	School	Childcare	Clinic	Hospital	Store	Market	Shopping	Station	Recreation	Worship	Friends
Ln distance [a]	-0.361***	-0.130*	-0.296***	-0.146***	-0.347***	-0.148***	-0.275***	-0.247***	-0.196***	-0.035	-0.205***	-0.362***
	(0.037)	(0.070)	(0.048)	(0.017)	(0.038)	(0.019)	(0.028)	(0.021)	(0.037)	(0.067)	(0.026)	(0.026)
Ln previous distance [b]	0.067*	-0.016										
	(0.037)	(0.067)										
Changed job	-0.050											
	(0.079)											
Changed school		-0.041										
		(0.190)										
Displaced	-0.055	0.034	-0.095	-0.106**	-0.112**	-0.142**	-0.047	-0.120**	-0.215***	0.023	-0.073	-0.104
	(0.087)	(0.159)	(0.169)	(0.047)	(0.056)	(0.056)	(0.056)	(0.051)	(0.074)	(0.087)	(0.063)	(0.077)
Ln distance from old home	-0.084**	-0.074	0.014	-0.033**	-0.083***	-0.036*	-0.027	-0.078***	-0.131***	-0.024	-0.000	-0.036
	(0.033)	(0.059)	(0.055)	(0.016)	(0.019)	(0.019)	(0.019)	(0.017)	(0.025)	(0.028)	(0.019)	(0.029)
Chinese	-0.212*	-0.229	-0.162	-0.154**	-0.280***	0.087	0.075	-0.126*	-0.116	-0.085	-0.174	-0.416***
	(0.111)	(0.218)	(0.308)	(0.064)	(0.077)	(0.070)	(0.073)	(0.064)	(0.102)	(0.126)	(0.128)	(0.093)
Indian	-0.244**	-0.377**	-0.309	-0.043	-0.232***	-0.155**	0.015	-0.146**	-0.193**	-0.161	-0.316***	-0.351***
	(0.102)	(0.166)	(0.246)	(0.056)	(0.064)	(0.066)	(0.063)	(0.060)	(0.084)	(0.119)	(0.092)	(0.092)
Other	-0.136	-0.706	0.414*	-0.543*	-0.027	-0.126	0.106	-0.150	0.057	0.118	-0.460	-0.286
	(0.459)	(0.565)	(0.241)	(0.296)	(0.208)	(0.276)	(0.198)	(0.252)	(0.320)	(0.480)	(0.345)	(0.389)
Non-citizen	-0.012	0.020	-1.383***	0.056	-0.015	0.031	0.163	-0.058	-0.106	-0.465	-0.444	0.038
	(0.357)	(0.478)	(0.240)	(0.187)	(0.248)	(0.258)	(0.196)	(0.252)	(0.319)	(0.405)	(0.368)	(0.331)
Age of head	-0.003	-0.010	-0.002	-0.002	-0.000	-0.002	-0.001	-0.003	-0.003	-0.005*	0.002	-0.003
	(0.004)	(0.007)	(0.006)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)
Income	0.000	0.000	0.000	0.000***	0.000***	-0.000	0.000	0.000**	-0.000	0.000	0.000**	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tenure	-0.018*	0.014	0.019	0.000	-0.006	0.001	-0.001	-0.009	0.006	0.004	-0.001	0.009
	(0.010)	(0.021)	(0.021)	(0.006)	(0.007)	(0.007)	(0.007)	(0.006)	(0.009)	(0.010)	(0.008)	(0.009)
Own PPR	0.056	0.279*	-0.205	-0.028	0.060	-0.108**	-0.018	0.017	-0.046	-0.002	-0.013	0.014
	(0.076)	(0.145)	(0.181)	(0.043)	(0.051)	(0.050)	(0.048)	(0.047)	(0.070)	(0.076)	(0.049)	(0.072)
Respondent is head	0.075	0.002	-0.007	-0.073*	-0.031	-0.045	-0.009	-0.076*	-0.148**	-0.058	0.049	-0.069
	(0.071)	(0.136)	(0.167)	(0.040)	(0.048)	(0.047)	(0.044)	(0.043)	(0.064)	(0.069)	(0.049)	(0.066)
Constant	5.845***	5.741***	5.102***	5.460***	5.655***	5.649***	5.340***	5.859***	5.626***	5.432***	5.380***	5.714***
	(0.238)	(0.387)	(0.448)	(0.120)	(0.151)	(0.143)	(0.134)	(0.122)	(0.188)	(0.220)	(0.154)	(0.187)
Observations	1,463	385	216	3,140	2,958	2,103	2,609	2,854	2,039	1,318	2,017	1,668
R-squared	0.09	0.07	0.18	0.04	0.05	0.04	0.06	0.06	0.04	0.01	0.14	0.16

Note: *** p<0.01, ** p<0.05, * p<0.1

a—For schools, the average distance to all schools per respondent is used

b—For schools, the average distance to all schools before (from previous homes) per respondent is used

Distance and frequency variables expressed in natural log form. Robust standard errors in parentheses

Orange shading highlights statistically significant negative coefficients and green highlights statistically significant positive coefficients. Darker shades correspond to higher significance levels.

For ethnicity variables, Bumiputera is the reference group.

Table F3: Regression results on determinants of satisfaction with accessibility to places with control variables and PPR-fixed effects (OLS)

	Dependent variable: Satisfaction with accessibility to…											
	Job	School	Childcare	Clinic	Hospital	Store	Market	Shopping	Station	Recreation	Worship	Friends
Ln distance [a]	-0.296***	-0.130*	-0.242***	-0.100***	-0.274***	-0.118***	-0.204***	-0.156***	-0.086**	-0.078	-0.155***	-0.360***
	(0.037)	(0.072)	(0.053)	(0.019)	(0.042)	(0.021)	(0.039)	(0.026)	(0.039)	(0.069)	(0.028)	(0.026)
Ln previous distance [b]	0.027	-0.024										
	(0.036)	(0.066)										
Changed job	-0.002											
	(0.077)											
Changed school	-0.012											
	(0.181)											
Displaced	-0.014	0.076	-0.060	-0.068	-0.057	-0.028	-0.018	-0.068	-0.097	0.141	-0.043	-0.094
	(0.092)	(0.158)	(0.193)	(0.051)	(0.059)	(0.059)	(0.060)	(0.054)	(0.080)	(0.094)	(0.066)	(0.081)
Ln distance from old home	0.032	-0.019	0.057	-0.012	-0.034*	-0.029	0.015	-0.019	-0.020	0.049	0.021	0.007
	(0.037)	(0.061)	(0.066)	(0.017)	(0.020)	(0.021)	(0.021)	(0.019)	(0.026)	(0.032)	(0.020)	(0.031)
Chinese	-0.129	-0.090	0.230	-0.060	-0.112	0.060	0.199**	-0.001	0.044	0.111	-0.026	-0.161
	(0.128)	(0.259)	(0.450)	(0.074)	(0.085)	(0.080)	(0.081)	(0.075)	(0.112)	(0.128)	(0.135)	(0.107)
Indian	-0.216**	-0.317**	-0.128	-0.039	-0.223***	-0.185***	0.050	-0.128**	-0.114	-0.138	-0.314***	-0.302***
	(0.100)	(0.161)	(0.245)	(0.055)	(0.063)	(0.066)	(0.063)	(0.059)	(0.083)	(0.116)	(0.092)	(0.090)
Other	-0.200	-0.494	0.365	-0.519*	-0.018	-0.206	0.099	-0.149	0.012	-0.076	-0.433	-0.155
	(0.431)	(0.476)	(0.333)	(0.295)	(0.206)	(0.267)	(0.199)	(0.238)	(0.304)	(0.486)	(0.346)	(0.404)
Non-citizen	0.229	0.498	-1.217***	0.098	0.190	0.140	0.195	0.098	-0.016	-0.357	-0.367	0.206
	(0.332)	(0.499)	(0.194)	(0.178)	(0.237)	(0.244)	(0.192)	(0.229)	(0.297)	(0.387)	(0.344)	(0.307)
Age of head	-0.004	-0.011	-0.003	-0.003	-0.002	-0.002	-0.001	-0.004**	-0.004	-0.006**	0.002	-0.005*
	(0.004)	(0.007)	(0.007)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)
Income	-0.000	0.000	0.000	0.000***	0.000**	0.000	0.000	0.000*	-0.000	0.000	0.000**	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tenure	-0.003	0.019	0.028	0.005	0.011	0.000	0.006	0.005	0.012	0.014	0.001	0.024**
	(0.011)	(0.020)	(0.025)	(0.007)	(0.008)	(0.007)	(0.008)	(0.007)	(0.010)	(0.012)	(0.008)	(0.009)
Own PPR	-0.018	0.206	-0.299	-0.035	0.008	-0.097*	-0.034	-0.043	-0.078	-0.025	-0.018	-0.031
	(0.077)	(0.144)	(0.198)	(0.044)	(0.051)	(0.051)	(0.049)	(0.047)	(0.071)	(0.077)	(0.050)	(0.074)
Respondent is head	0.085	-0.012	-0.045	-0.070*	-0.025	-0.039	-0.008	-0.064	-0.122*	-0.056	0.057	-0.063
	(0.069)	(0.134)	(0.161)	(0.040)	(0.046)	(0.046)	(0.044)	(0.042)	(0.062)	(0.068)	(0.048)	(0.065)

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	Dependent variable: Satisfaction with accessibility to…											
	Job	School	Childcare	Clinic	Hospital	Store	Market	Shopping	Station	Recreation	Worship	Friends
Kerinchi	0.368***	0.647***	0.657***	0.300***	0.747***	0.446***	0.010	0.652***	0.499***	0.472***	0.423***	0.414***
	(0.110)	(0.206)	(0.243)	(0.063)	(0.069)	(0.069)	(0.111)	(0.076)	(0.102)	(0.092)	(0.113)	(0.087)
Salak Selatan	0.463***	0.458	-0.690	-0.076	0.122	0.230**	-0.168	0.163*	0.045	-0.361*	-0.140	-0.301**
	(0.166)	(0.340)	(0.760)	(0.092)	(0.112)	(0.101)	(0.119)	(0.098)	(0.147)	(0.211)	(0.183)	(0.138)
Wahyu	0.728***	0.650***	0.559*	0.261***	0.637***	0.180**	0.325***	0.570***	0.777***	0.512***	0.441***	0.551***
	(0.108)	(0.191)	(0.290)	(0.064)	(0.072)	(0.074)	(0.066)	(0.066)	(0.096)	(0.109)	(0.106)	(0.098)
Jalan Sungai	0.645***		0.505	0.241**	0.486***	0.502***	0.248**	0.493***	0.931***	0.606***	0.535***	0.173
	(0.159)		(0.406)	(0.094)	(0.103)	(0.117)	(0.099)	(0.089)	(0.113)	(0.164)	(0.145)	(0.136)
Constant	5.173***	5.176***	4.611***	5.251***	4.988***	5.383***	5.151***	5.284***	4.948***	4.979***	5.014***	5.380***
	(0.254)	(0.408)	(0.498)	(0.128)	(0.165)	(0.153)	(0.144)	(0.132)	(0.198)	(0.226)	(0.185)	(0.196)
Observations	1,463	385	216	3,140	2,958	2,103	2,609	2,854	2,039	1,318	2,017	1,668
R-squared	0.12	0.11	0.23	0.05	0.10	0.07	0.07	0.11	0.09	0.05	0.16	0.19

Note: *** p<0.01, ** p<0.05, * p<0.1

a—For schools, the average distance to all schools per respondent is used

b—For schools, the average distance to all schools before from previous home per respondent is used

Distance and frequency variables expressed in natural log form. Robust standard errors in parentheses

Orange shading highlights statistically significant negative coefficients and green highlights statistically significant positive coefficients. Darker shades correspond to higher significance levels.

For ethnicity variables, Bumiputera is the reference group.

For PPR variables, PPR Beringin is the reference group.

Table F4: Regression results on determinants of satisfaction with accessibility to places with control variables and PPR-fixed effects (ordinal logistic regression)

	Dependent variable: Satisfaction with accessibility to…											
	Job	School	Childcare	Clinic	Hospital	Store	Market	Shopping	Station	Recreation	Worship	Friends
Ln distance [a]	-0.446***	-0.159	-0.419***	-0.166***	-0.401***	-0.185***	-0.334***	-0.251***	-0.117**	-0.145	-0.275***	-0.512***
	(0.058)	(0.112)	(0.097)	(0.032)	(0.061)	(0.034)	(0.063)	(0.043)	(0.051)	(0.099)	(0.048)	(0.042)
Ln previous distance [b]	0.056	-0.091										
	(0.050)	(0.094)										
Changed job	0.025											
	(0.107)											
Changed school	-0.013											
		(0.271)										
Displaced	0.016	0.135	-0.194	-0.100	-0.055	-0.070	0.025	-0.085	-0.113	0.181	-0.080	-0.159
	(0.133)	(0.248)	(0.347)	(0.087)	(0.088)	(0.108)	(0.098)	(0.094)	(0.110)	(0.142)	(0.117)	(0.118)
Ln distance from old home	0.036	0.009	0.126	-0.014	-0.030	-0.041	0.044	-0.023	-0.018	0.092*	0.023	0.016
	(0.054)	(0.096)	(0.127)	(0.030)	(0.029)	(0.039)	(0.035)	(0.032)	(0.037)	(0.047)	(0.037)	(0.043)
Chinese	-0.136	-0.360	0.171	-0.100	-0.161	0.110	0.292**	0.008	0.039	0.090	-0.060	-0.250
	(0.175)	(0.359)	(0.855)	(0.127)	(0.126)	(0.152)	(0.135)	(0.130)	(0.153)	(0.207)	(0.235)	(0.153)
Indian	-0.181	-0.435*	-0.060	0.017	-0.259***	-0.211*	0.189*	-0.146	-0.027	-0.079	-0.397**	-0.351***
	(0.134)	(0.240)	(0.371)	(0.089)	(0.092)	(0.108)	(0.104)	(0.097)	(0.108)	(0.168)	(0.160)	(0.127)
Other	-0.089	-0.753	0.453	-0.611	-0.063	-0.329	0.062	-0.100	0.204	-0.028	-0.717	-0.282
	(0.667)	(0.659)	(0.604)	(0.413)	(0.321)	(0.407)	(0.358)	(0.347)	(0.394)	(0.835)	(0.516)	(0.639)
Non-citizen	0.307	0.349	-2.059***	0.042	0.218	0.120	0.341	0.211	0.031	-0.356	-0.456	0.197
	(0.494)	(0.874)	(0.345)	(0.292)	(0.291)	(0.497)	(0.370)	(0.376)	(0.399)	(0.475)	(0.442)	(0.429)
Age of head	-0.006	-0.017	-0.006	-0.005	-0.003	-0.006	-0.002	-0.005	-0.005	-0.010**	0.003	-0.007*
	(0.006)	(0.010)	(0.010)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.004)	(0.005)	(0.004)	(0.004)
Income	0.000	0.000	0.000	0.000**	0.000*	-0.000	0.000	0.000*	-0.000	0.000	0.000***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tenure	-0.007	0.019	0.059	0.010	0.016	0.005	0.008	0.005	0.017	0.018	0.006	0.037***
	(0.016)	(0.031)	(0.047)	(0.011)	(0.011)	(0.013)	(0.012)	(0.012)	(0.013)	(0.018)	(0.014)	(0.013)
Own PPR	-0.009	0.311	-0.506	-0.076	0.010	-0.203**	-0.009	-0.068	-0.114	-0.036	-0.078	-0.022
	(0.105)	(0.225)	(0.342)	(0.074)	(0.076)	(0.093)	(0.082)	(0.079)	(0.093)	(0.114)	(0.094)	(0.105)
Respondent is head	0.133	-0.056	-0.165	-0.093	-0.030	-0.044	0.034	-0.085	-0.107	-0.066	0.118	-0.082
	(0.095)	(0.198)	(0.267)	(0.067)	(0.069)	(0.081)	(0.074)	(0.071)	(0.084)	(0.104)	(0.086)	(0.093)

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	Dependent variable: Satisfaction with accessibility to…											
	Job	School	Childcare	Clinic	Hospital	Store	Market	Shopping	Station	Recreation	Worship	Friends
Kerinchi	0.430***	0.881***	1.250***	0.454***	1.068***	0.791***	0.153	1.139***	0.610***	0.651***	0.638***	0.565***
	(0.147)	(0.303)	(0.430)	(0.106)	(0.103)	(0.125)	(0.169)	(0.127)	(0.130)	(0.137)	(0.178)	(0.125)
Salak Selatan	0.476**	0.797	-0.757	-0.146	0.152	0.357**	-0.249	0.194	0.004	-0.586*	-0.316	-0.395**
	(0.229)	(0.490)	(1.350)	(0.148)	(0.158)	(0.176)	(0.185)	(0.158)	(0.183)	(0.302)	(0.263)	(0.182)
Wahyu	0.935***	0.893***	0.987*	0.374***	0.892***	0.272**	0.488***	0.843***	0.892***	0.734***	0.525***	0.751***
	(0.153)	(0.282)	(0.504)	(0.107)	(0.104)	(0.129)	(0.114)	(0.108)	(0.132)	(0.161)	(0.170)	(0.143)
Jalan Sungai	0.919***		0.872	0.413**	0.736***	0.884***	0.520***	0.814***	1.186***	0.980***	0.948***	0.328
	(0.258)		(0.721)	(0.166)	(0.169)	(0.218)	(0.170)	(0.162)	(0.181)	(0.296)	(0.260)	(0.213)
Constant cut1	-4.455***	-4.441***	-3.701***	-4.701***	-4.242***	-5.241***	-4.301***	-4.477***	-3.385***	-4.225***	-3.802***	-4.610***
	(0.395)	(0.752)	(0.949)	(0.291)	(0.277)	(0.404)	(0.324)	(0.282)	(0.293)	(0.424)	(0.368)	(0.320)
Constant cut2	-3.321***	-3.351***	-2.540***	-3.618***	-3.070***	-4.127***	-3.200***	-3.584***	-2.443***	-3.225***	-2.891***	-3.527***
	(0.369)	(0.634)	(0.833)	(0.241)	(0.254)	(0.316)	(0.269)	(0.245)	(0.273)	(0.382)	(0.330)	(0.300)
Constant cut3	-2.241***	-2.331***	-1.988**	-2.755***	-2.065***	-3.196***	-2.334***	-2.698***	-1.710***	-2.138***	-2.147***	-2.512***
	(0.361)	(0.619)	(0.792)	(0.226)	(0.246)	(0.285)	(0.254)	(0.229)	(0.267)	(0.355)	(0.315)	(0.289)
Constant cut4	-1.025***	-1.246**	-0.061	-1.335***	-0.876***	-1.583***	-0.990***	-1.239***	-0.728***	-0.792**	-1.009***	-1.294***
	(0.358)	(0.605)	(0.747)	(0.217)	(0.243)	(0.268)	(0.243)	(0.222)	(0.266)	(0.350)	(0.306)	(0.289)
Constant cut5	0.015	-0.134	1.241	-0.019	0.329	-0.171	0.411*	0.094	0.341	0.302	0.361	-0.243
	(0.358)	(0.599)	(0.767)	(0.216)	(0.244)	(0.264)	(0.244)	(0.222)	(0.267)	(0.350)	(0.307)	(0.290)
Constant cut6	1.984***	2.345***	3.174***	2.247***	2.815***	1.907***	2.314***	2.324***	2.291***	2.669***	2.495***	2.050***
	(0.364)	(0.602)	(0.796)	(0.221)	(0.254)	(0.269)	(0.250)	(0.228)	(0.273)	(0.364)	(0.314)	(0.299)
Observations	1,463	385	216	3,140	2,958	2,103	2,609	2,854	2,039	1,318	2,017	1,668

Note: *** p<0.01, ** p<0.05, * p<0.1

a—For schools, the average distance to all schools per respondent is used

b—For schools, the average distance to all schools before from previous home per respondent is used

Distance and frequency variables expressed in natural log form. Robust standard errors in parentheses

Orange shading highlights statistically significant negative coefficients and green highlights statistically significant positive coefficients Darker shades correspond to higher significance levels.

For ethnicity variables, Bumiputera is the reference group.

For PPR variables, PPR Beringin is the reference group.

Source: KRI (2020)

APPENDIX G

HOUSING SPACE STANDARDS REFERENCE: UK AND SINGAPORE

UK's various GFAs

The UK has developed specific space standards as early as 1935 through Housing Act of 1935 which laid out minimum bedroom areas required for different household sizes. Since then, UK has been continuously involved in refining their national housing space standards, with their first set of evidence-based standards known as Parker Morris standards in the 1960s. Their latest revision of space standards is known as Nationally Described Space Standard established in 2015. The standard lists out Gross Internal Floor Area (GIFA) requirements of new dwellings for various level of occupancy coupled with floor areas and dimensions of key areas including bedrooms and storage[210].

Table G1 illustrates the minimum GIFAs for one to three storey dwellings in the UK. This study will refer to GIFA of 1-storey to make an easy comparison with the existing PPR layout. It is noticed that an occupancy level of 4 – 6 persons requires a minimum of 3 bedrooms, which is somewhat similar to the average occupancy level in a 3-bedroom PPR unit. Since the floor area in the UK is measured in GIFA, we are unable to make a direct comparison with PPR's GFA[211]. However, it is noteworthy that UK's GIFA between 797sqft to 1,023sqft for a three-bedroom unit is certainly greater than the floor area of a PPR unit since GIFA only considers the internal space of a unit.

Table G1: Nationally Described Space Standards for UK, 2015—Minimum gross internal floor areas and storage (sqft)

Bedrooms	Bedspaces	1 storey	2 storey	3 storey	Built-in storage
1b	1p	398/420*			1.0
	2p	538	624		1.5
2b	3p	657	797	-	2.0
	4p	753	850		
3b	4p	797	904	969	2.5
	5p	926	1,001	1,066	
	6p	1,023	1,098	1,163	
4b	5p	969	1,044	1,109	3.0
	6p	1,066	1,141	1,206	
	7p	1,163	1,238	1,302	
	8p	1,259	1,335	1,399	
5b	6p	1,109	1,184	1,249	3.5
	7p	1,206	1,281	1,346	
	8p	1,302	1,378	1,442	
6b	7p	1,249	1,324	1,389	4.0
	8p	1,346	1,421	1,485	

Note: * Where a 1b1p has a shower room instead of a bathroom, the floor area may be reduced from 39m² to 37m², as shown bracketed
Source: Department for Communities and Local Government (2015)

[210] Department for Communities and Local Government (2015)
[211] In the UK, GFA refers to the total floor area of all enclosed space, including the thickness of external walls whereas GIFA measurement excludes the external walls (up to internal face of external walls). Source: Designing Buildings Wiki (n.d.)

Additionally, UK's space standards[212] specify a higher number of bedrooms that is required for households with more than 6 persons. In the UK, a six-person household requires between four to six bedrooms, with GIFA of more than 1,000sqft. When compared with the PPR experience, a huge difference is noticed in how large households in the PPR units are actually living in an overcrowded condition.

Singapore's HDB public housing

Singapore is another prominent example for successful public housing models, accommodating over 80% of its population. It has also registered approximately 90% of home ownership rate—one of the highest in the world. The establishment of Housing Development Board (HDB), the Land Acquisition Act in 1966, and the role of Central Provident Fund (CPF) as a financial institution were regarded as the major anchors to developing successful housing policies[213].

HDB is the agency responsible for Singapore's public housing programmes, offering both rental and ownership schemes. Their flats were first developed as basic flats, with simple designs to meet daily needs in addition to maintaining a low construction cost. However, the design and size of HDB flats evolved over the decades to keep up with the rising living standards of Singapore citizens as well as to improve the quality of living environment. Table G2 demonstrates the latest types of HDB flats and the associated GFAs.

Table G2: The GFA of HDB flats in Singapore

HDB Flat Types	2-Room Flexi	3-Room	4-Room	5-Room	3Gen	Executive Flat
Floor area (sqft)	387 and 484	646 and 700	969	1,184	1,238	1,399
No. of bedrooms	1	2	3	3	4	3
No. of bathrooms	1	2	2	2	3	2

Source: HDB (n.d.)

As illustrated in Table G2, there are about six types of HDB flats, mostly offered for subsidised ownership[214]. Although the 3-room HDB flats have approximately similar GFAs to that of a PPR unit, it only provides two bedrooms with an additional room for storage purpose. It is also important to note that the average household size of HDB residents is much lower than that of PPR residents, as depicted in Table G3.

[212] Standards serve as guidelines only and can only be executed following an evidenced-based local plan policy, taking into consideration residents' needs. The local authorities in UK are given the flexibility to make necessary amendments upon reviewing their local plan. Department for Communities and Local Government (2015)
[213] Phang and Helble (2016)
[214] Various housing grants are offered to assist buyers in owning HDB homes.

Table G3: The average household size of HDB residents in 2017

Type of HDB flats	Average Household Size (Persons)
HDB 1- And 2-room Flats *	2.19
HDB 3-room Flats	2.63
HDB 4-room Flats	3.42
HDB 5-room And Executive Flats	3.77
Total HDB Dwellings	3.25

Note: *Includes HDB studio apartments
Source: SingStat (n.d.)

In 2017, the average household size of HDB 3-room flats was 2.63 and 4-room flats was 3.42—both of which were lower than the average household size of 4.5 in PPR. This implies that HDB residents are not facing as much of overcrowding issues faced by the PPR residents, considering the various types of public housing flats and GFAs available for residents to take up according to their affordability and preference.

Interestingly, HDB also offers a variety of public housing schemes targeted at different segments of the population including married couples, multigeneration families, elderly couples as well as singles which makes its public housing models successful. For example, the Single Singapore Citizen scheme for singles, Multi-Generation Priority Scheme for parents with married children, Parenthood Priority Scheme for couples with children, and Studio Apartment Priority Schemes for senior citizens, among others.

Recognising the financial constraints of low-income families, HDB has also reserved some HDB 1-room and 2-room flats for social renting. HDB conducts thorough assessments in ensuring only deserving applicants to participate in social renting, including reviewing childrens' eligibility to purchase HDB homes. The rental rates are highly subsidised, and tenure period is only for 2 years. The tenant' eligibility will be reviewed every two years to decide on the rental contract renewal. The residents who have exceeded the eligibility will be given the opportunity to purchase HDB flats.

Moreover, efforts are also taken to revitalise old housing estates by upgrading and repairing HDB flats as old as 70 years, which are then incentivised for ownership. Other renewal activities include creating more community facilities, improving the road and transportation network and modernising the town centres. This indicates that the government is not only dedicated to improving future dwellings but also placed equal attention on maintaining and upgrading old dwellings.

It is noteworthy that one of the major reasons for the successful public housing provision in Singapore is due to the government efforts in updating the database of HDB residents including their demographic and economic profile e.g. household income, household size, and measuring their residential satisfaction for every five years[215]. This results in government having sufficient information to analyse current housing demand and supply as well as forecasting future housing demand and supply that needs to be met.

[215] Ling et al. (2017)

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