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Belinda Yuen  
Emily Soh

# Housing for Older People in Singapore: An Annotated Bibliography



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# Foreword

Globally, ageing is seen to be one of the biggest challenges for societies as they grapple with the needs of this demographic group. It requires a new awareness of the deployment of resources, rethinking health care and new skills of redesigning and retrofitting a city and housing for this important and growing population. Cities and authorities have to think of new innovative solutions to meet these needs.

The Lee Li Ming Programme in Ageing Urbanism was established in the Lee Kuan Yew Centre for Innovative Cities in 2013 through the generous gift of a private donor who had a special interest in research on ageing.

The annotated bibliography is a product of the literature scan on the subject of housing for the older population in Singapore. It focuses on housing for the elderly, examining where they live, how they live and how they cope with the experiences they encounter. This is the first of the publications from the larger research study—Understanding the Changing Needs of Singapore’s Older Population. Other publications will follow, which will be more analytical and substantive to add to the growing body of knowledge on ageing in Singapore.

We are happy to share this initial result with the research community and policy makers who are also grappling with this subject.

Singapore

Chan Heng Chee  
Ambassador-at-large and Chairman  
Lee Kuan Yew Centre for Innovative Cities  
Singapore University of Technology and Design

# Acknowledgements

Although only our names appear on the cover of this publication, many people have contributed to its making.

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This volume draws on research undertaken under the Lee Li Ming Programme in Ageing Urbanism at the Lee Kuan Yew Centre for Innovative Cities, Singapore University of Technology and Design. We are deeply grateful to Mrs. Lee Li Ming for funding our ageing research.

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# Chapter 1

## State of Elderly Housing in Singapore

### Policy, Practice and Research

#### 1.1 Introduction

The world's population is ageing rapidly in all regions and at an unprecedented scale in the 21st century. Like many other fast growing Asian cities, Singapore is projected to become an aged society and may eventually transition to a hyper-aged society.<sup>1</sup> Singapore's older population (age 65+) has been increasing over the past decades, from 6 % (160,000) in 1990 to 13 % (440,000) in 2015 (Department of Statistics 2005, 2014). This proportion is projected to increase further to 17 % (590,000) in 2020 and to 24 % (900,000) by 2030. This trend is attributable to a combination of factors. Since the 1970s, Singaporeans' fertility rate has been declining due to population policy (two-child policy) and lifestyle changes (later marriages, more women joining the workforce, etc.). Even though the population policy has been reversed in 1987 to encourage families to have three or more children, fertility rate has remained low (1.25 in 2014) while average life expectancy has been increasing because of medical advances (e.g. better chronic disease management, better patient-centred care, early disease detection and treatment). Singaporeans are living longer than before; 82.8 years in 2014 as compared to 72 years in 1980.

Tomorrow's older population is expected to differ from those of past decades. The old-old (85+) are increasing at a faster pace. Between 1990 and 2000, the 85+ have increased at an annual rate of 5.9 % as compared to the growth of 3.6 % for the 65+ and 1.9 % for the total population (Ang and Lee 2000). Since 2000, the number of centenarians in Singapore has risen from 232 in 2000 to 1200 in 2015 while the number of 85+ increased from 14,000 to 41,000 over the same period (*The Straits Times* 21 October 2015). Each successive cohort of older adults is expected to be

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<sup>1</sup>Basing on the proportion of older population, three types of society may be distinguished: ageing society: 7–14 % of the population are 65 years or older; aged society: 14–21 % of the population are 65 years or older; and hyper-aged society: 21 % or more of the population are 65 years or older. See Coulmas (2007).

increasingly more educated, healthy and economically better off than past counterparts. According to the 1995 National Survey of Senior Citizens in Singapore, 93 % of Singapore's older population are independent and able to perform the basic activities of daily living (e.g. cleaning, washing, dressing, feeding, bathing, toileting).

In terms of living arrangements, the 2011 National Survey of Senior Citizens in Singapore reported a steady decline in average household size, from 4.4 persons in 1995 to 3.3 in 2011. More are living in one-person households. Among the 55+, 15 % lived in one-person households in 2011 as compared to 6 % in 2005 while 16.6 % of 75+ lived in one-person households in 2011 as compared to 4.4–7.5 % in 2005 (Kang et al. 2013). The shift towards smaller households is most prominent among Chinese households; one-person Chinese households increased from 8.8 % in 2000 to 13 % in 2010 as compared to the corresponding figures of 4.3 and 6.5 % for Malay households and 7.9–10.3 % for Indian households (Department of Statistics 2011). Many of these one-person households are single (57 %), divorced or separated (14 %) or widowed (14 %). By 2030, the total number of elderly living alone could increase to 83,000 as compared to only 35,000 in 2012 (*The Straits Times* 12 April 2012). These trends point to an increasing need for community- and home-based eldercare services and infrastructural and social support for the growing number of older persons living on their own.

Even while the majority of older adults are expected to remain healthy and functional, by 2030, 13 % (117,000) of 65+ (more than double the current number) may be semi-/non-ambulant. As rapid ageing sets in, with 5 of 6 public hospitals having over 85 % bed occupancy, the approach to population ageing in Singapore is to enable the older person to age in place. The majority (70 %) of Singapore's older population live in the community within inter-generational households; less than 0.3 % lived in institutional care in 2008. Although there is a range of housing types, the common abode is public housing where 82 % of Singapore's resident population live. About 11 % (113,294) of households in public housing are headed by persons age 65+ while about 144,792 households (13 %) have head-of-household who are 55+ (Housing and Development Board 2014). About 32 % of the 55+ public housing residents lived in 1–3-room flats and 54 % in 4-room and larger flats.

This paper presents an overview on the state of policy, practice and research on housing for older population in Singapore. It summarises what and how Singapore has been delivering housing for an ageing population, where it is headed and priorities for the future. This is followed by an annotated bibliography, which seeks to contribute pertinent literature on housing for older population. Compiled by the Singapore University of Technology and Design Library, the annotated bibliography includes citations and key foundational articles/writings, both published and unpublished, on housing for older population in Singapore. Even though largely Singapore focused, the bibliography provides citations on other Asian and developed countries, in particular, Canada, USA and UK.

This bibliography is not intended to be an exhaustive list of all writings related to the topic but a compendium of relevant works selected to support additional

research on housing for ageing population. The common objective is to provide a sense of the scope, current issues and debates on housing for older population.

## 1.2 Policy on Elderly Housing in Singapore

Singapore has long been concerned about population ageing and its implications. As early as 1982, Singapore has convened a high level committee—The Committee on the Problems of the Aged (1982–1984), chaired by the Minister for Health, to study the implications of an ageing population and to recommend solutions (Table 1.1).

By 1999, the first Inter-ministerial Committee on the Ageing Population (1998–1999) was set up, comprising ministers, members of parliament, senior civil servants and representatives of non-governmental organisations dealing with older people. Recommendations covered six key areas: financial security, employment and employability, housing and land use policies, health care, social integration of the elderly, and cohesion and conflict in an ageing society. In particular, recommendations were made towards the holistic development of ‘heartware’ (individual and society’s values, attitudes and perceptions of ageing and social integration of older people), ‘software’ (policies, programmes and services to provide community-based infrastructure and services for older people), and ‘hardware’ (built environment that affects how well older people are integrated into the community) to realise the vision of successful ageing in Singapore.

In the area of housing and land use policies, the Committee recommended ageing in place as the key principle of an age-inclusive built environment. The ageing in place policy builds on the population’s preference to age in place. Several strategies were put forward for the creation of elder-friendly homes and environment including:

- Reviewing building codes and standards on elder-friendly homes;
- Raising awareness and education.
  - Of architects, developers and homeowners of the need to create safe home environments for older people;
  - Tertiary education on town planning, architecture and building for an ageing population;
- Retrofitting and design.
  - Of public housing flats and multi-storey car parks with lift landing on every floor, as far as technically and financially feasible;
  - Providing elder-friendly features in public housing upgrading programmes for older public housing blocks where feasible and cost-effective;
  - Consulting para-medical professionals in the design and modification of flats to meet the needs of older people better;

**Table 1.1** Singapore committees on population ageing

| Year                                 | Name of committee                                    | Key policy thrusts/recommendations  |
|--------------------------------------|--|---|
| 1982                                 | Committee on the Problems of the Aged                | Report of the Committee on the Problems of the Aged (1984) <ul style="list-style-type: none"> <li>• Integrate older persons into Singaporean society</li> <li>• Maintain productivity of older persons</li> <li>• Improve attitudes towards ageing and older adults</li> </ul>  |
| 1988–1989                            | Advisory Council on the Aged                         | Report of the Advisory Council on the Aged (1989) <ul style="list-style-type: none"> <li>• Similar to the 1984 report recommendations</li> <li>• Strengthen existing policies and programmes</li> <li>• Recognise the need for greater coordination among ministries and establish the National Advisory Council on the Family and the Aged</li> </ul>  |
| 1989–1998                            | National Advisory Council on the Family and the Aged | <ul style="list-style-type: none"> <li>• Serve to identify gaps and overlaps in elderly services</li> </ul>   |
| 1998–1999<br>(Reconstituted in 2003) | Inter-ministerial Committee on the Ageing Population | Report of Inter-ministerial Committee on the Ageing Population (1999)<br>Vision of successful ageing and adoption of successful ageing framework <ul style="list-style-type: none"> <li>• Improve social integration of older adults</li> <li>• Study, review and improve health care needs of older adults</li> <li>• Improve financial security of older adults</li> <li>• Enhance employment and employability of older adults</li> <li>• Improve elder-friendly housing, community and environment</li> <li>• Address cohesion and conflict in ageing society</li> </ul>                                  |
| 2004–2006                            | Committee on Ageing Issues                           | Report of the Committee on Ageing Issues (2006) <ul style="list-style-type: none"> <li>• Make Singapore an elder-friendly place; “the best home for all ages”</li> <li>• Make Singapore an inclusive society such that older adults are integrated with other age groups and that the environment is accessible</li> <li>• Provide a continuum of holistic affordable health care and elder care that is of good quality, efficient and cost-effective</li> <li>• Provide opportunities for older Singaporeans to lead healthy and active lifestyles and promote positive attitudes towards ageing</li> </ul> |

(continued)

**Table 1.1** (continued)

| Year | Name of committee  | Key policy thrusts/recommendations  |
|------|--|---|
| 2007 | Ministerial Committee on Ageing (chaired by Minister for Health) | <ul style="list-style-type: none"> <li>• Coordinate and plan strategies across different government agencies relating to population ageing</li> <li>• Improve employment and financial security</li> <li>• Enable ageing-in-place</li> <li>• Provide holistic and affordable healthcare and eldercare</li> <li>• Promote active ageing</li> <li>• Release of 'Action Plan for Successful Ageing' in August 2015, mapping out a whole-of-nation strategy with a S\$3 billion implementation budget, involving over 60 initiatives in individual wellbeing and independence, social compact, infrastructure, research to help Singaporeans age confidently and lead active lives</li> </ul> |

*Source* Inter-ministerial Committee on the Ageing Population (1999); Committee on Ageing Issues (2006); *Channel News Asia* (24 February 2016), accessed 31 March 2016

- Creating more choice in housing arrangements for older people;
- Piloting the 'white block' concept in public housing to give owners flexibility to modify their flat layout to cater to changing needs as they age;
- Integrating housing for older people into existing housing estates.

To ensure integrated community planning, upfront land use planning would be undertaken to establish community facilities and social service network to better support older people and their caregivers.

Housing for older population is again emphasised in subsequent Inter-ministerial Committee on Ageing Issues (2004–2006). Ageing in place remains a key policy. There are two desired outcomes to this policy. The first is elder-friendly housing, providing more housing options and helping older people to monetise their housing assets without having to move out of their homes. The aim is to enable older people to live a lifetime in their own homes. The second is a barrier-free city, making all public housing estates barrier-free and all new public buses elder-friendly and wheelchair accessible (a senior-friendly public transport network). The intent is to enable older people to live independently and to move around Singapore easily, that is, to have unhindered access from homes to shops and services. The overarching goal is to develop Singapore into an accessible city for all.

To promote an accessible city, the Building Construction Authority of Singapore has developed and implemented a Code on Barrier-Free Accessibility in Buildings since 1990. Universal Design guidelines have been incorporated in later revisions of the Code, providing a more comprehensive set of accessibility guidelines for a

wider range of building types as well as public and community facilities. In 2007, a 10-year barrier-free accessibility upgrading plan (2007–2016) and a S\$40 million accessibility fund have been implemented to support the upgrading of existing (pre-1990) buildings that are not barrier-free accessibility compliant. In the public transport sector, the Land Transport Authority (LTA) has begun to retrofit existing mass rapid transit (MRT) stations since 2000 to enhance accessibility for the older person and those with disabilities. Since 2006, all MRT stations are equipped with barrier-free facilities. From 2009, LTA has mandated that all new bus stops be designed to barrier-free standards (Ministry of Transport website).

The policy on ageing in place is given further impetus in May 2014 when the Singapore Health Minister announced in Parliament of the government's intention to launch a whole-of-nation action plan to support and enable the population to achieve successful ageing (*Today* 27 May 2014). Following a yearlong series of public consultations, the Ministerial Committee on Ageing (MCA) announced in August 2015 a national action plan for successful ageing. Beyond the study and identification of initiatives and an injection of funds (S\$3 billion), the plan maps out a whole-of-nation strategy to further create a good environment for older people to age in, where they can age actively and gracefully in place. The plan includes over 60 initiatives, covering individual wellbeing and independence (health and wellness, lifelong learning, senior volunteerism, lifelong employability, retirement adequacy), social compact (respect and social inclusion, protection of vulnerable seniors), infrastructure (housing, transport, public spaces, healthcare and aged care) and research on population ageing (MCA 2015). The plan will be progressively implemented over the next few years and implementation will be monitored through outcome-based indicators.

Under elderly housing, new initiatives include age-friendly housing and infrastructure like the provision of elder-friendly amenities at public places (e.g. seniors parks and gardens), the creation of Continuing Care Precincts where nursing homes and assisted living facilities would be co-located with public housing in the same precinct, the co-location of eldercare and childcare facilities within new housing estates and the incorporation of smart monitoring and alert systems in public housing flats with elderly residents (Ministry of Health 2016). By 2020, the number of community hospital beds and nursing home places is expected to increase by over 70 % while home and community care places will expand by 50 and 100 % respectively. Over the years, ageing is increasingly redefined as an opportunity—'to turn longevity into our advantage'. The aim is to make Singapore 'the best home for Singaporeans of all ages'.

### 1.3 Practice on Elderly Housing in Singapore

A widening range of spaces has been provided to support ageing in place as part of the official discourse on successful ageing. Homes are increasingly being remade more elder-friendly. The urban interventions include not only the development of

special housing design for the older population and the installation of safety and convenience equipment in public housing but also the provision of home care and community services to support the older population's continued dwelling in their family home and community. This section examines the practice of housing for older population in Singapore, covering the typologies of elderly housing provision, the supporting housing and neighbourhood adaptation and renewal schemes, community- and home-based services needed to complement housing to meet ageing in place aspirations.

### **A. Elderly Housing Typologies in Singapore**

Elderly housing in Singapore may be broadly grouped into three general categories: (a) general housing, which is housing that caters to the general public, (b) purpose-built housing for the elderly, which is housing configured and built to cater to elderly needs, and (c) long-term residential care homes, which ties in medical or daily help services with accommodation. These housing are provided by both public and private organisations.

#### ***1.3.1 General Purpose Housing***

These are dwellings for the general public. The vast majority, over 80 % of Singapore's resident population live in public housing (over 1 million dwelling units). Most of these are under the management of the public housing authority, the Housing and Development Board (HDB), which was set up in 1960 to plan, design and develop public housing (Mah 2011; Yuen 2009). The remaining lives in private sector supplied housing, which includes the full gamut of apartments, condominiums, landed terrace, semi-detached and detached houses. The average height of most public housing apartment blocks is 12 storeys with the more recent development rising to 30–50 stories. They are equipped with stairs and lifts to aid vertical mobility. The tallest public housing block is 50-storey (Duxton@Pinnacle) while the tallest housing by the private sector is 70-storey (The Sail in the city area).

Many of the older people who live in general purpose housing may be living with family (spouse or children), with other elderly or alone. Statistics from the Singapore Census of Population 2010 indicate that 24 % (up from 20 % in 2000) of resident households had at least one elderly member while 64 % of resident households (733,310 households) had 2 or more generations living in 1 family nucleus and 6.6 % (76,432) had 2 or more family nuclei (i.e. 2 or more married couples) living in public and private non-landed properties (Department of Statistics 2011). Even though there is rental housing, the emphasis is on home ownership to give citizens a stake in the country. Aside from grants, eligible residents are allowed to use their Central Provident Fund (employment savings fund) for down payment and to service monthly mortgage loan instalments (Phang 2001). As a result, home ownership has risen; more than 90 % of residents are homeowners. As part of the home ownership programme, a home protection scheme (administered by the

Central Provident Fund) has been implemented since 1981 to help ensure that dependents of flat owners would not lose their homes because they were unable to finance their mortgage loan in the event of death or permanent incapacity of the sole breadwinner.

The HDB public housing is located in housing estates or new towns that are increasingly designed and upgraded to become more age-inclusive and universally accessible. They are designed as integrated neighbourhoods with a comprehensive range of community facilities, market places, social and recreational infrastructure (e.g. playgrounds, fitness stations) within walking distance and with easy access to public transportation. Generally, only about 50 % of the housing estate land is allocated to residential development (Table 1.2). Each town would have a town centre that functions as the core activity area where larger commercial and retail facilities, MRT station and bus interchange are generally located as well as a number of neighbourhood and precinct centres where smaller, localised amenities can be found. The aim is to deliver a better living environment for public housing residents and create towns that are well designed, sustainable and community-centric (Housing and Development Board website).

**Table 1.2** HDB new town land use

| Land use  | Prototype new town—Punggol<br>(96,000 dwelling units) |      |
|---|---|------|
|   | Land area<br>(hectares)                               | %    |
| Commercial<br>(town centre and neighbourhood centre) <sup>a</sup> | 13  | 1.5  |
| Residential <sup>b</sup>  | 432   | 51.2 |
| Schools and institutions  | 83  | 9.8  |
| Open space  | 107   | 12.7 |
| Sports complex  | 20  | 2.4  |
| Industry <sup>c</sup>   | –   | –    |
| Major roads   | 134   | 15.9 |
| Utilities and others  | 55  | 6.5  |
| Total   | 844   | 100  |
| Gross new town density  | 114 dwelling units per hectare                        |      |

*Notes*

<sup>a</sup>Includes civic, cultural, recreational uses and incidental developments in the town and neighbourhood centres

<sup>b</sup>Includes private housing within the town boundary

<sup>c</sup>Non-polluting industries only

Source Housing and Development Board (2011)



There are a large variety of flat types (from 1-room, 2-room, 3-room, 4-room, 5-room to executive apartments and condominiums) and layouts to cater to different housing needs and budgets (e.g. nuclear families, single, elderly and multi-generation families). Figure 1.1 illustrates some of the flat types. A typical 4-room flat with a net floor area of about 90 m<sup>2</sup> would have 3 bedrooms, 1 living/dining room and a kitchen, that is, about 27 m<sup>2</sup> per person (mean household size is 3.3 persons). The dwelling units are each provided with modern bathrooms, sanitation, water, energy, and refuse collection, among others. They are designed to rely on natural lighting and ventilation, as far as possible. Their design has evolved over the years including the development of special design to encourage extended family living and support population ageing. In a move to provide a greater variety of housing options, private sector architects are invited to design and build public housing. An example is the design, build and sell scheme (introduced in 2005) where the private sector is responsible for the entire public housing development process, from bidding for the land to designing the project, overseeing construction and selling the flats directly to eligible public housing buyers.

An example of a type of general purpose housing that supports multi-generation living is the 3Gen flats introduced in September 2013 to help extended families stay under one roof to promote mutual care and support. These flats are designed with an additional bedroom with attached bathroom. 3Gen flats are a more recent iteration of the typology that promotes multi-generation living (Table 1.3).

### ***1.3.2 Purpose-Built Housing for the Elderly***

*Elderly Studio Apartments*—In 1998, purpose-built public housing for older people was introduced for purchase in the form of Studio Apartments (30-year lease) for residents age 55+. These apartments started out as one-room rental flats, catering to the low-income or needy elderly who do not stay with their families. These apartments and the adjoining public areas are designed to facilitate ease of access (widened doorways, without steps) including lift access at every floor. The apartments are fitted with elder-friendly fittings such as non-squat toilets, grab-bars, lever-type taps and door handles, modified clothes drying lines, etc. (Table 1.3). There are pull-cord alarms and indicators outside the units and at the void deck on the ground floor to alert other residents when an older person needs assistance or at times of emergency. There is provision at the first and second storeys of the block for Volunteer Welfare Organisations (VWOs) to provide community-based care and support services for the older residents.

Increasingly, there is a greater emphasis on an inclusive approach in the planning and location of purpose-built elderly housing. At the outset, certain housing estates



**Fig. 1.1** HDB floor plans of various flat typologies. *Source* Housing Development Board (2015), pp. 18–22

**Table 1.3** Elderly housing provision in Singapore

| Type (L-launch year)      | Housing sector  | Typology  | Elder-friendly features  | Features   | Eligibility  | Sale/rent  |
|---------------------------|---|---|--|--|--|--|
| Studio apartment (1998)   | Public housing  | Type 1–35 m <sup>2</sup><br>Type 2–45 m <sup>2</sup>  | Purpose-built for elderly with elder-friendly features and fittings            | Elder-friendly features include: Lever taps; Wider doors for wheelchair access; Rocker switch; Non-slip tiles and levelled flooring; Bathroom with support bars; Pull cords alarm located throughout the flat; Enlarged door eye viewer; Grab bars at the front door and corridors to flat; Emergency panel at lift lobby on every level | The main applicant must be a Singapore citizen and at least age 55 at time of application<br>The average gross monthly household income of all persons listed in the application must not exceed S\$10,000<br>Spouse must be included in the application and must be Singaporean or Permanent Resident | Sale (30-year lease)<br>S\$83,000–90,000<br>From April 2016, lease can be extended between 5 and 15 years at the prevailing market value |
| Senior group homes (2012) | Public housing with services run by Volunteer Welfare Organisations (VWOs) from social sector | 5–8 units at one level of a rental HDB block, with VWO staff stationed there. Flats partitioned to allow 2–3 residents to live in each unit | Purpose-built for elderly or adapted with elder-friendly features and fittings | Similar as above   | Senior age 60 and older, Singaporean<br>Assessed to be High Category II using Resident Assessment Form (RAF) with scores from 16 to 24 point<br>Certified by a doctor to be fit for communal living and/or participation in communal activities, and Eligible for HDB Rental Housing                   | Rental: S\$50 a month  |

(continued)

Table 1.3 (continued)

| Type (Launch year)       | Housing sector | Typology   | Elder-friendly features   | Features  | Eligibility   | Sale/rent  |
|--------------------------|----------------|--|---|---|---|--|
| 3Gen flats (2013)        | Public housing | 115–120 m <sup>2</sup>                               | Hybrid: Designed for multi-generation families, but does not come with housing adaptations for elderly        | Designed for multi-generation families to stay under one roof and to support the needs of larger families, which may require an additional bedroom with attached bathroom | The multi-generation family must comprise: Married couple and parent (s) or Courting couple (fiancé and fiancée) and parent(s) or Widowed with child and parent(s) or Divorced with child and parent(s)<br>Average gross monthly household income must not exceed S\$10,000<br>When buying a flat with an extended family, average gross monthly household income must not exceed S\$15,000 | Sale (99 year lease): S\$335,000–400,000   |
| 2-room flexi flat (2015) | Public housing | Type 1–36 m <sup>2</sup><br>Type 2–45 m <sup>2</sup> | Age-inclusive design that caters to different age groups. Elder-friendly fittings can be added on when needed | This scheme will merge and replace Studio Apartment and 2-room flat   | Older citizens age 55+ have flexibility to choose length of lease on their 2-room flat based on their age, needs and preferences<br>Average gross monthly household income must not exceed S\$12,000 in short lease<br>Average gross monthly household income must not exceed S\$6000 in 99-year lease  | Short sale lease (15–45 years): elderly can take up a lease of between 1.5 and 45 years in 5-year increments as long as it covers them and their spouse up to age of at least 95 years<br>First- and second-timer families as well as first-timer singles can buy new 2-room flats on 99-year lease<br>S\$37,000–110,000, depending on lease |

(continued)

Table 1.3 (continued)

| Type (Launch year)         | Housing sector   | Typology  | Elder-friendly features | Features   | Eligibility   | Sale/rent   |
|----------------------------|--|---|-------------------------|--|---|---|
| Dual-key apartments (2009) | Private housing and Executive Condominiums (ECs) (hybrid public-private) | Main apartment next door or adjoining a studio apartment, under a single strata-title deed. Common size from about 81–107 m <sup>2</sup> and 127–144 m <sup>2</sup> | Generally not           | Dual units next to or adjoining each other with separate access to allow multi-generation families to live close to each other yet maintain privacy  | No eligibility criteria for private sector housing. For EC, an applicant may buy a dual-key unit if he/she forms a multi-generation family as follows:<br>(i) Married couple with parents/grandparents<br>(ii) Fiancé and fiancée couple with parents/grandparents<br>(iii) Widowed/divorced with children and parents/grandparents | Units (freehold lease) at The Tembusu (private development) launched in August 2013 cost about S\$1400–1500 per sq ft   |
| Retirement community       | Private housing  | Elder-friendly housing with leisure, recreational and community amenities, and healthcare and elderly assistance services run by professional management            | Yes                     | Wide range of facilities such as a clubhouse, swimming pool, and theatre; a 24 h concierge to provide services to residents; special services including domestic help and medical care; and integrated community services and shops such as restaurants, beauty salon and medical clinics, etc. (Note: marketing information only) | No eligibility criteria   | Prices at The Hillford (60-year lease) ranged from S\$388,000 (36.9 m <sup>2</sup> 1 bedroom unit) to S\$648,000 for a 2-bedroom dual key unit (61 m <sup>2</sup> ) |

Sources: HDB InfoWEB <http://www.hdb.gov.sg/>, Knight Frank (2014), The Hillford Condo website, accessed 31 March 2016

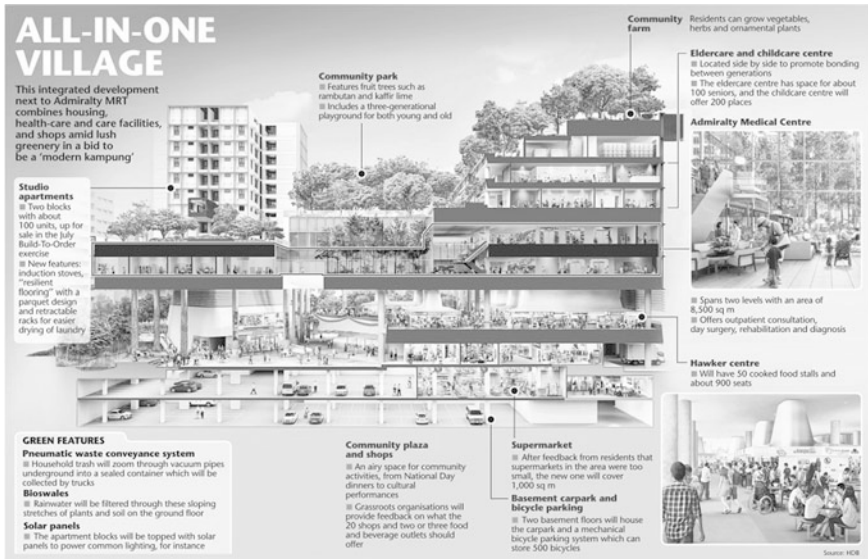
are earmarked for such development. Subsequently, these purpose-built flats are built as an entire block of elderly housing accommodation but located within general public housing estates to achieve greater mix and inclusivity at the level of urban land use (Mathews and Leong 2014).

*Two-room Flexi Flat*—To prevent the possible phenomenon of an elderly ghetto, a new two-room Flexi Flat public housing typology has been introduced in 2015. This flat type caters not only to older adults but also to families and singles. These flats are designed to intersperse with other flat typologies within a block. They are available in two sizes: 36 and 45 m<sup>2</sup>, merging the studio apartment (30-year lease) and two-room flat (99 year lease) into one scheme. Older residents (55+) have the flexibility to choose the length of tenure based on their age (but must at least cover them and their spouse till the age of 95), needs and preferences.

Shorter tenure enhances the affordability of such flats for older people (e.g. flats with a 40-year lease might cost S\$63,000 to purchase while that with a 15 year lease might cost around S\$37,000) (*Channel News Asia* 19 August 2015). Owners are not allowed to resell these flats on the open market. At least 40 % or a minimum of 100 units of the 2-room Flexi flats in a Build-to-Order (BTO) project will be made available to older residents. Under a new Senior Priority Scheme, half of this quota will be set aside for older residents who apply for a unit near their current flat or near their married child (MND and HDB 2015). The flats are equipped with elder-friendly fittings (e.g. grab bars). Social services located on the ground floor of such blocks include family service centres, eldercare and childcare services, making the spaces more inclusive and multi-generational.

*Kampung Admiralty, a vertical village*—This is a project that seeks to reinterpret kampong (village) living in public housing, involving multi-government agencies and a private sector architectural design firm. Announced in 2013 and to be completed by 2017, the development features various housing typologies and a broad suite of services, facilities, community and commercial spaces that would cater to different ages, needs and interests. For the older population, there would be two blocks of purpose-built elderly studio apartments and a Senior Activity Centre co-located with a childcare centre to ‘promote inter-generational interaction and bonding’ (MND 2014). The integrated public housing development is envisioned with three tiers of activities,

- Ground tier includes retail shops and community plaza;
- Mid tier includes hawker centre, medical centre; and
- Top tier includes studio apartments, roof gardens (including space for community gardening), a function hall, eldercare facilities (social and recreational activities, day care and healthcare services for seniors) and childcare centre.



Source *The Straits Times* 27 April (2014)

**Senior Group Homes**—The Ministry of Social and Family Development (MSF) initiated the Senior Group Homes in 2012 in collaboration with the HDB and VWOs to enable older people who have little family support and require assisted living to age in place independently and in community. Under this scheme, several units of flats from a rental public housing block, usually on the same level, are partitioned and adapted with elder-friendly features to allow two to three frail elderly to stay in each flat. VWOs such as the Thye Hua Kwan Seniors Group Home and NTUC Eldercare provide services (funded or co-funded by the government) including home care, rehabilitation and social services (MSF 2014). The Scheme has expanded from 2 homes in the pilot project in 2012 to 14 homes in 2015 and 60 homes by 2016 (*The Straits Times* 15 March 2013). This initiative is an extension of the Senior Activity Centres services, to bring a larger degree of home-based services to older residents living alone. It is also a response to the projected trend of increasing number of elderly living alone (*The Straits Times* 19 April 2014).

**Dual-key Apartments (Private sector supplied)**—Compared to the public sector, there is generally fewer specialised housing for older people by the private sector. However, this state of affairs may be changing with emerging socio-demographic trends of smaller family units, more older people choosing independent living and a generally more prosperous generation of future elderly. The dual-key apartment concept introduced by the private sector in 2009 follows a similar housing product offered by the government in 1987—the granny flat public housing typology.

Both product types comprise a main unit and an adjoining, separate studio apartment for the elderly, which are under one strata-title deed. Both housing typologies feature separate accesses that allow privacy for the family and the

elderly. Several key differences may be discerned. Firstly, the public housing granny flats has an eligibility criterion that requires the main applicant to name their parents or grandparents as the occupant of the studio apartment, whereas the private sector dual key studio apartments have no such requirements. Secondly, the granny flats are purpose-built elderly public housing with housing fixtures adapted for elderly use whereas the dual-key studio apartments are general purpose apartments.

The dual key typology has been selling well, especially in 2011 and 2012, appealing to a wide range of clientele, not only to those with older members in multi-generation families but also to families who want to give more independence to their children who are becoming young adults or those who want to use the additional unit as a home-office or rental unit (Knight Frank 2014). The dual-key concept is popular with investors who want rental income without having to buy two properties. Such typologies have been introduced in private condominiums and Executive Condominium (hybrid public-private) developments, although in the latter, the dual-key apartments are only available to multi-generation families.

*Retirement Communities (Private sector supplied)*—Retirement communities, a typology of elderly housing that has originated and been implemented widely in many western countries, have generated some interest in Singapore, with the public, private and social sectors looking at its viability in an effort to diversify and broaden housing choices for the older population. The reception of such a typology has yet to be truly tested in Singapore. The retirement village typology typically combines elder-friendly housing with leisure, recreational and community amenities, and healthcare and elderly-assistance services run by professional management. This typology allows the older resident to live independently while remaining within the community of other elderly.

In 2014, all 281 units at The Hillford, Jalan Jurong Kechil, marketed as Singapore's first retirement condominium, were sold within hours of launch (*The Straits Times* 18 January 2014). The land was sold in 2012 under a government land tender (*Today* 18 January 2014). According to the URA tender brief for the site, the land may be sold under a 30-year or 45-year or 60-year lease and the developer has the flexibility to develop it as a condominium or retirement housing. The technical conditions of the tender allow for incentive (additional) gross floor area (GFA) of up to 10 % of maximum permissible GFA to be used for supporting medical and communal related uses that cater to the elderly and/or balcony use if the land is used for Retirement Housing (URA 2012).

The development was marketed as a resort-styled development for active and independent seniors. It features a wide range of facilities such as a clubhouse, swimming pool and theatre; a 24-hour concierge to provide services to residents; special services including domestic help and medical care; and integrated community services and shops such as restaurants, beauty salon and medical clinics, etc. within the development (The Hillford website). There is, however, no minimum age requirement for the purchase of the units. The development attracted buyers across all age groups, with many buyers citing affordability of the 60-year tenure (as opposed to the typical 99-year leasehold) as a major attraction.



The fact that many buyers are not seniors left some dissatisfied at being “out-bid by non-retirees and investors” (*Channel News Asia* 10 March 2014). Others are concerned that the marketed features for the elderly may not eventually be realised and noted a key departure from retirement communities in Western cities, which are professionally managed by eldercare/medical care teams. The Hillford would be managed by a Management Corporation Strata Title as with all other typical condominium developments in Singapore (*The Straits Times* 13 January 2014).

### ***1.3.3 Long-Term Residential Care Homes***

From the outset, admission into institutional care has been made restrictive so that “families do not ‘dump’ elderly members into homes” (Teo 1994, p. 418) and that institutional homes function as “a safety net for the most disadvantaged,” (Wijeysingha 2005, p. 191). As the Committee on Aging Issues (CAI) affirms, institutional care “remains a measure of last resort” (CAI 2006, p. 12). Perhaps because of this, there is consistently low proportion of seniors residing in old folks’ homes. In 2014, it stands at 2.4 %, <sup>2</sup> gradually decreasing yearly from 2.9 % in 2008.

There are two main categories of long-term stay-in care homes available to the older population (Teo 1994). While the social sector represented by the VWOs has expanded their role in service provision over the last three decades, these categories are still broadly relevant in current practice in terms of the care needs of the elderly—whether he/she has support from his/her next-kin, his/her health condition and ability to afford stay-in care. According to the AIC website on ‘stay-in care’, the first type is the shelter and community homes, which are for seniors who are ambulant with minimum medical care needs and who are without next-of kin or caregivers to stay with and care for them. Such homes provide accommodation, socio-recreational activities, meals and laundry services. These homes are run by VWOs, which largely consist of non-profit welfare organisations and charitable arms of religious organisations. A sub-category of this first group are the welfare homes, which take in destitute elderly. These homes are run by VWOs under the ambit of the Ministry of Social and Family Developments (MSF website b).

The second category are the nursing homes, which provide long-term nursing care for dependent seniors who cannot be cared for at home or in their community. The elderly applicant for these homes needs to fulfil a set of criteria to be admitted. These include physical or mental disability due to illness, be in a semi-mobile condition, wheelchair-bound or bed-ridden and need help with daily activities like

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<sup>2</sup>The figures are calculated from the number of residents in old folks’ homes (DOS 2015, Table 25.7) as a percentage of the total number of Singapore Residents above age 65 (DOS 2015, Table 3.3).

going to toilet or walking, and have tried all other care options such as hiring domestic helper, using day-care or home care services, etc. (AIC website b). Nursing homes are run either by VWOs or private sector operators. The former category can be self-funded or government subsidised while the latter are for-profit entities, with some receiving government subsidies.

Patients staying in private nursing homes typically pay full price and there are no admission criteria, except the ability to pay. Since April 2003, government subsidies have been extended to patients admitted to private nursing homes who meet means-testing criteria. This is administered under the Ministry of Health portable subsidy scheme to encourage greater private sector participation in elderly care services sector.

## **B. Public Housing Schemes for the Elderly**

Housing schemes for the elderly stem from the elderly housing policy intentions to help older people age in place. They fall mainly into three types: schemes that encourage families to live under the same roof or in proximity, those that support monetisation of housing assets to help older residents to unlock housing value to enhance or supplement their retirement fund, and those that support/subsidise housing adaptations to make the homes more elder-friendly over time.

The earliest schemes on elderly housing focused mainly on promoting family support, integration with community, and independence for the older person. Examples include the Multi-tier Family Housing Scheme (introduced in 1982), which encouraged co-residence of extended family under one dwelling unit, the Joint Balloting (1978) and the Joint Selection Schemes (1996), which respectively gave priority or incentives to married children and their aging parents to purchase flats next door to each other or within the same estate. Purpose-built elderly housing in the form of granny flats, introduced in 1978 to complement these schemes, saw low take-up rates and was subsequently discontinued.

Today, the schemes that encourage parents and children to live near each other include the Multi-Generation Priority Scheme (MGPS), Married Child Priority Scheme (MCPS), Studio Apartment Priority Scheme (SAPS) and CPF Housing Grant for Family. In September 2013, the 3-Generation Family Flats (3GEN) were introduced to enable multi-generation families to live under one roof. Schemes that help the elderly to unlock their housing equity include the Enhanced Lease Buyback Scheme (LBS), Ageing in Place Priority Scheme (APPS) and Silver Housing Bonus (SHB), which would support seniors in “right-sizing” to another flat near their existing dwelling if they feel that a smaller flat might be more suited to their needs after their adult children have moved out. Table 1.4 summarises some of the public housing schemes that help older population age in place.

Over time, housing adaptations with elder-friendly fixtures and neighbourhood improvements for better access as well as the availability of community- or home-based elderly services would be essential to enable residents to age in place. As early as 1989, estate renewal has been introduced to maintain the parity between new and old public housing estates (Table 1.5). The renewal process included

**Table 1.4** Public housing schemes for ageing in place

| HDB scheme                                | Launch year | Programme and benefits to the elderly   |
|---|-------------|---|
| Enhanced Lease Buyback Scheme (LBS)       | 2009        | Aims to help lower income elderly households (in 3- and 4-room flats) to unlock part of their housing equity while they continue living in their homes by selling the tail-end of their remaining lease back to the HDB to enhance their retirement income  |
| Ageing in Place Priority Scheme (APPS)    | 2012        | Aims to promote ageing in place within the community; older residents are given the choice to downsize their flat and move to a Studio Apartment within the same locality if they desire  |
| Senior Priority Scheme (SPS)              | 2012        | Aims to give priority to elderly who wish to age in place in a familiar environment or to live near their parents/married child; the HDB will set aside 40 % of public flat supply of 2-room Flexi flats offered under Build-to-Order and Sale of Balance Flats exercises for the elderly. They can apply for flats that are located, <ul style="list-style-type: none"> <li>• In same town or estate as their current flat or private property which is owned and occupied by them, or</li> <li>• Within 2 km from existing flat or private property owned and occupied by them</li> </ul> |
| Multi-Generational Priority Scheme (MGPS) | 2012        | Aims to encourage families to stay together and to encourage familial care for the elderly; the HDB encourages all generations of families with elderly to stay close to each other with a priority to Build-to-Order flats. 50 % of Studio apartments would be set aside for this purpose  |
| Married Child Priority Scheme (MCPS)      | 2012        | Aims to encourage married children and parents to reside together, or within same estate or neighbouring estate to foster care of aged parents  |
| Silver Housing Bonus (SHB)                | 2012        | Aims to help the elderly living in bigger flats (including those in private housing) to move to a smaller public housing flat (up to 3-room flat). It is especially targeted at lower income elderly households, giving them a S\$20,000 bonus when they move to a smaller flat   |
| Enhancement for Active Seniors (EASE)     | 2013        | Aims to promote ageing in place for the elderly; this scheme is aimed at improving the comfort and mobility within the older residents' homes. This is a programme where seniors can directly apply for home improvement if their units do not qualify for the Home Improvement Programme   |
| Studio Apartment Priority Scheme (SAPS)   | 2013        | Introduced to merge the Ageing-in-Place Priority Scheme and Married Child Priority Scheme, this scheme gives the elderly more chances at balloting a studio apartment   |

Source HDB InfoWEB <http://www.hdb.gov.sg/> accessed 31March 2016

**Table 1.5** Public housing estate renewal

| Estate renewal scheme                         | Launch year | Programme and benefits to elderly   |
|---|-------------|---|
| Main upgrading programme                      | 1989        | Aims to enhance the overall living environment of public housing estate and to ensure that all services could be accessed by the elderly. Improvement works are implemented at 3 levels: (a) flat (e.g. replacement of existing squat/pedestal pan with new pedestal pan, provision of grab bar), (b) block (e.g. improved lift lobby, upgrading of lifts to stop at every floor where technically feasible, better and faster lifts, re-screening of void deck/corridor, new designed letter boxes, replacement of block number plates), and (c) precinct (e.g. addition of covered linkways, entrance car porch/drop-off porch); proceed only if 75 % of eligible households in the precinct vote in favour of upgrading works. Flat owners pay 10–25 % of the upgrading cost, depending on flat type. They are allowed to use their CPF savings to pay for their share of the cost over a 10-year period |
| Selective En-bloc Redevelopment Scheme (SERS) | 1995        | Aims to rejuvenate and intensify development in older public housing estates. Flats in the selected SERS precinct are compulsorily acquired under the Land Acquisition Act and their residents resettled into replacement flats in replacement precincts. The old flats are then demolished to make way for new developments. Since residents are relocated under SERS, care is taken to minimise the inconveniences and to share with them the benefits of SERS. Affected residents are offered compensation for their existing flats based on full market value, an assured replacement flat at affordable prices, financial counselling and a comprehensive communications (consultation) plan. They only need to move out of their existing flats after the replacement flat is constructed, usually within the same neighbourhood  |
| Lift upgrading project                        | 2001        | Aims to solve lift access problem, ensuring convenient and quick access for the elderly to their flats. In the pre-1990 HDB blocks, lifts do not always stop on every floor, making it a barrier for people with mobility difficulty  |
| Interim upgrading programme plus              | 2002        | Aims to integrate the Interim Upgrading Programme (1993) and Lift Upgrading Programme (2001) so residents do not have to wait for two separate programmes, which are carried out at different times. More residents can look forward to earlier lift upgrading. Fully funded by government, improved facilities include better lighting, see-through glass vision lift door panels for enhanced safety and 100 % direct lift access for all flats, where technically feasible   |

(continued)

**Table 1.5** (continued)

| Estate renewal scheme           | Launch year | Programme and benefits to elderly   |
|---------------------------------|-------------|---|
| Home improvement programme      | 2007        | To replace the Main Upgrading Programme, the objective is to provide more focused home improvements (essential and optional) in a systematic and comprehensive manner to all residents including the elderly. The scheme applies to flats built up to 1986 and have not undergone Main Upgrading Programme  |
| Neighbourhood renewal programme | 2007        | Focuses on renewal and improvement works at the block and precinct levels, this programme replaces the Interim Upgrading Programme Plus (2002). It is implemented on two or more contiguous precincts in estates built up to 1995 and have not undergone upgrading. The aim is to have better coordination and integration of improvements across neighbouring precincts, more varied improvements to meet differing needs of residents. All costs are borne by the government. Implemented by town councils, the renewal would proceed if at least 75 % of eligible residents in the neighbourhood vote support    |
| Remaking Our Heartland (ROH)    | 2007        | Aims to create more endearing homes, building on each estate's unique identity. Punggol (young town), Yishun (middle-aged town) and Dawson (mature estate) were identified as the first 3 towns that will undergo the remaking. In 2011, 3 more estates—East Coast, Hougang and Jurong Lake—were announced in the 2nd ROH programme. New features include heritage trails and sites, entrance markers, community plazas, landscaping/vertical green, floor retiling, playgrounds, shelter/mini pavilions, distinctive street furniture and lighting to create a unique character for each neighbourhood/town centre |

Source HDB InfoWEB <http://www.hdb.gov.sg/> accessed 31 March 2016

retrofitting various aspects—flats, blocks, neighbourhoods, town centres, estate facilities and transportation networks.

More improvement options for the older population have been introduced. From 2006, the HDB has implemented universal design features within and outside new-built public housing flats (e.g. ramps at main entrance of flat, levelled floors throughout the flat, wider internal corridor and doorway, wheelchair-accessible common toilets, easily accessible switch sockets). In 2012, after a pilot-run of the Enhancement for Active Seniors programme (EASE) in Marine Parade under the Ministry of Health City for All Ages project, the programme has been offered to older residents living in all public housing to provide subsidised home modification services to enhance their comfort, safety and mobility at home. The home

modification works include slip resistant treatment to toilet and bathroom flooring, installation of grab bars and ramps where technically feasible.

### C. Elderly Neighbourhood/Home-Care Services

Institutionalisation of the elderly requires them to be uprooted and brought to where services are available. Neighbourhood/home-care services bring these services to where the elderly are and avoids or delays institutionalisation for as long as possible. Initiatives to improve and adapt dwelling units for older people and to encourage family support of the elderly form just one part of the equation to encourage ageing in place. As prevalent family structure and living arrangements shift, Reisman (2005) argues that increasing rates of singlehood in younger Singaporean generations would result with fewer family members to care for the elderly. Against the trend of increasing singlehood and one-person households, Kang et al. (2013) suggests a “salient need to provide available homecare services to cater to these elderly persons, to enable them to age within the community” (p. 12). That is, elderly care services that are brought into the communities and homes are a key complement in supporting older residents’ wellbeing and quality of life as they age in place.

Within the public sector, the Ministry of Social and Family Development (MSF) works closely with the Ministry of Health to “develop integrated and holistic health-and-eldercare services and programmes” (MSF website) while the National Council of Social Service (NCSS) funds and/or administers a comprehensive range of eldercare services such as day-care centres for seniors, neighbourhood links (NLs) and Senior Activity Centres (SAC), etc. (NCSS website). Social services from VWOs play a critical role in the provision of such services. Table 1.6 lists some of the services—community- and home-based eldercare services—run by VWOs or private sector providers, often with government funding support.

At the community level, the Ministry of Health has introduced the City for All Ages project to make communities senior-friendly including the promotion of health screening and exercise (Ministry of Health 2014). The aim is to enhance aged care in terms of better accessibility, quality and affordability. In 2014, a Home Care Development (HCD) Plan, spearheaded by the Ministry of Health, has sought to expand home care services as part of a comprehensive suite of aged care services to help older people age in place. Some of the initiatives include the provision of funding to help home care providers scale up their services, and provision of a broader range of services including home-based rehabilitation services for elderly discharged from hospitals (MOH website). The quest is to develop new models of integrated and people-centred care that cater to the older person’s health and social needs. The Agency for Integrated Care has begun to work with home care providers to achieve greater levels of coordination and integration between home-based healthcare and personal care while the MOH would work with home- and community-care providers to develop guidelines: Guidelines for Home Care (Home Care Workgroup 2015) and Guidelines for Centre-Based Care (Centre-based Care Workgroup 2015).

**Table 1.6** Neighbourhood/homecare services

| Elder-care service centre/programme | Model of service provision   | Locale                    | Services  |
|-------------------------------------|--|---------------------------|---|
| Befriending services                | Generally provided by voluntary welfare organisations (VWOs) such as Lions Befrienders Service Association, Ang Mo Kio Family Service Centres. They recruit and train volunteers (including healthy seniors) to befriend and provide support to the isolated, vulnerable and homebound seniors | Home-based                | <ul style="list-style-type: none"> <li>• Promote physical and psycho-emotional wellbeing of vulnerable seniors, with limited or no family support, through community participation</li> <li>• Reach out to vulnerable seniors through home visitations and social activities by trained volunteers</li> <li>• Provide support in areas such as running errands, ad hoc escort services, referrals to appropriate services and coordination of programmes with external parties</li> </ul> |
| Senior home-based care              | Services run by VWOs, social enterprises or private sector providers such as NTUC Health Care@home, TOUCH Home Care, Thye Hua Kwan Moral Society Moral Home Help Service, etc.   | Home-based                | <ul style="list-style-type: none"> <li>• Provide a range of services to assist seniors who are living in the community such as meals delivery, housekeeping, laundry, medical escort and care in personal hygiene</li> <li>• Home Nursing/Medical Service is for seniors who need medical and nursing care in their own home</li> </ul>   |
| Care close to home programme        | Temasek Cares CLG Ltd (an institution of a public character set up by Temasek Holdings in 2009) co-funds and partners AWWA (Asian Women's Welfare Association, local NGO) Seniors Activity Centre (SAC), Kreta Ayer SAC and Agency for Integrated Care to run the programme                    | Home- and community-based | <ul style="list-style-type: none"> <li>• Provide services such as physical and cognitive care (e.g. medical and nursing care), social care (e.g. befriending and financial support) and personal care (e.g. showering and toileting)</li> <li>• Assistance to coordinate the multiple medical appointments on the elderly's behalf and escort them to these appointments</li> <li>• Services are free of charge</li> </ul>  |

(continued)

**Table 1.6** (continued)

| Elder-care service centre/programme                             | Model of service provision  | Locale   | Services  |
|---|---|--|---|
| Singapore Programme for Integrated Care for the Elderly (SPICE) | SPICE programme is a model of care developed by the Agency for Integrated Care (AIC), which will partner VWOs to operate SPICE centres. The centres will collaborate with Public Hospitals and surrounding general practitioners to form a seamless model of care | Home- and community-based                          | <ul style="list-style-type: none"> <li>• Provide comprehensive, integrated centre- and home-based services for frail elderly who have high care needs to recover and age within the community</li> <li>• A multi-disciplinary team comprising medical, nursing, allied health and ancillary professionals provides a suite of patient-centric services such as primary and preventative care, nursing care, rehabilitation services, personal care and social and leisure activities</li> </ul> |
| Senior Activity Centres (SAC)                                   | Co-funded by the government. Services run mainly by VWOs such as AWWA, Thong Kheng Welfare Services Society, Thye Hua Kwan Moral Society, etc.  | Neighbourhood centre with some home-based services | <ul style="list-style-type: none"> <li>• Drop-in centres for needy and vulnerable seniors staying in one- and two-room HDB rental flats in service cluster</li> <li>• Provide socio-recreational programmes and activities, support services such as monitoring of frail and/or homebound elderly, befriending, emergency alert response calls, guidance, advice, information and referral</li> </ul>   |
| Senior Services Centres (SSC)                                   | Services run by VWOs, social enterprises or private sector providers such as Econ Healthcare Ltd, Wellness Service Centre, Narayana Multi-service Centre, etc.  | Neighbourhood centre                               | <ul style="list-style-type: none"> <li>• Similar to SACs but also includes medical services</li> <li>• Integrated Senior Day Care Centre that integrates the services of Senior Day Care Centres and Day Rehabilitation Centres (see below)</li> </ul>  |

(continued)



**Table 1.6** (continued)

| Elder-care service centre/programme | Model of service provision   | Locale               | Services   |
|-------------------------------------|--|----------------------|--|
| Neighbourhood Links (NL)            | Services run mainly by VWOs such as Thye Hua Kwan Moral Society, Fei Yue Family Service Centres, Lions Befrienders Service Association, etc.                     | Neighbourhood centre | <ul style="list-style-type: none"> <li>• Focal points for activities and community services for seniors and other residents to enhance their social wellbeing and neighbourhood support network</li> <li>• Offer opportunities for volunteerism, inter-generational activities</li> <li>• Serve as links between residents and service providers in the community</li> </ul>                                   |
| Senior day care centres             | Services run by VWOs, social enterprises or private sector providers such as Econ Healthcare Limited, NTUC ElderCare Co-operative Ltd, St. Lukes ElderCare, etc. | Neighbourhood centre | <ul style="list-style-type: none"> <li>• Provide supervision and support to seniors while their caregivers are at work</li> <li>• Socio-recreational activities and meals are provided</li> <li>• Cater to frail seniors who require follow-up with maintenance programmes after their discharge from the Day Rehabilitation Centres</li> </ul>  |
| Day rehabilitation centres          | Services run by VWOs, social enterprises or private sector providers such as All Saints Home, Orange Valley, St Luke's Eldercare Ltd, etc.                       | Neighbourhood centre | <ul style="list-style-type: none"> <li>• Provide custodial and active rehabilitation for frail seniors who require follow-up rehabilitative care after discharge from hospitals, as they are affected by conditions such as stroke, arthritis, amputation, dementia and frailty</li> <li>• Offer programmes such as physiotherapy, occupational therapy and recreational activities for the elderly</li> </ul> |

Sources NCSS website; Temasek Cares website; Concern.sg website; AIC website, accessed 31 March 2016

A reading of the Singapore Budget of 2015 indicates that there are plans to scale up the capacity of home-based service provision for the older population. Government subsidies are now available to private sector operators to tender for home and community care services (previously this is available only to VWOs). The expansion is expected to help achieve the goal of increasing the number of available home care places from 6500 in 2015 to 10,000 in 2020, day care places from 1000 to 6200, and home palliative care places from 5000 to 6000 over the same period (*The Straits Times* 12 March 2015).

## 1.4 Research on Elderly Housing in Singapore, 1980s–2016

### The 1980s

Much of the early research on (or encompassing) elderly housing issues in Singapore, initiated by government ministries and agencies, began in the 1980s. Prior to that, the earliest records were survey research conducted in the mid-1970s on homes of the aged by the Singapore Social Welfare Department, Ministry of Social Affairs. An inaugural Committee on the Problems of the Aged was formed in 1982 to study the issues and challenges Singapore faced, as it becomes an ageing society. In the early 1980s, the Singapore Council of Social Services (SCSS) together with the Ministries of Health and Social Services commissioned pioneering research on aspects of ageing in Singapore in order to surface issues and to guide policymaking. Subsequently, other government ministries and agencies also conducted studies and primary research.

For example, with relation to housing policies, the *Social Policy and the Elderly in Singapore* (SCSS 1981) assessed and forecasted the needs of the elderly and included as part of its recommendations the need for public housing typologies to support multi-generational living. The Ministry of Health (MOH 1982, 1984) explored the problems faced by the elderly including issues of living arrangements. Lim's 1987 study on the *Elderly of the Future* commissioned by the Ministry of Community Development (MCD) analysed demographic trends and a forecast of the elderly population till 2030.

The 1980s also saw the establishment of legislative and regulatory frameworks and guidelines on various aspects on elderly policies and practices. The legislative framework for the design and implementation of barrier-free environment has its foundational study by the MCD—the 1982 *Study on Barrier-free Environment for the Disabled and the Aged*, which recommended the incorporation of proposed accessibility code to the Building Control Regulations (of 1979) for the implementation of barrier-free design in buildings, public spaces and public transportation infrastructure. In 1986, the MCD published further guidelines for minimum standard of care for homes for the aged including building design and safety guidelines.

Scholarly studies on housing of the elderly in the 1980s covered a broad range of issues. They include: familial versus state responsibility for supporting the elderly (Lee 1986); family structure and living arrangements (Chen and Cheung 1988; Chen and Jones 1989); exploration and gaps identification in the supply of elderly housing (Lee 1986); integrated physical planning of housing, recreational and healthcare facilities planning for the elderly (Boey 1983); building and community facilities design requirements for the elderly (Tham 1989); and elderly housing in the context of high-rise, high-density living (Lim 1985).

### **The 1990s**

The situation of elderly housing and public feedback were updated in the 1990s. There was comprehensive collection of data by government ministries through national census and surveys. A census on the elderly was published by the Department of Statistics (1994), capturing data on demographic structure, household size, housing and living arrangements, amongst a comprehensive range of data categories. National surveys on senior citizens were conducted by the Ministry of Social Affairs (1995) and Ministry of Health et al. (1996). These collected a broad range of data on the older population including their socio-economic profiles, living arrangements, health, caregiving and services, etc. The Ministry of Community Development (1995) published *Law and the Elderly*, serving to educate the elderly on legal issues including property laws on estate duty, joint tenancy, etc. Lo (1996), commissioned by the Singapore Institute of Labour Studies, wrote *Preparing for Retirement* to help Singaporeans plan for retirement including the financing of retirement homes. In recognition of the multi-faceted issues of an ageing society and the need for a coordinated national response, an Inter-Ministerial Committee on the Ageing Population (IMC) was set up in the late 1990s with a vision for Successful Ageing in Singapore.

Discourse on familial versus state responsibility for supporting the elderly continued into the 1990s. This brought more research on family structure and living arrangements for the elderly and their evolution (e.g. Mehta et al. 1995; Harrison 1997). The 1990s seemed to be a decade of change for the broadening of elderly housing options in Singapore and this soon became a dominant theme in research. Common research thrusts included concepts of inclusivity in city (Harrison and Parker 1999), integrative thinking in policymaking for the aged (MCD 1999), enablement and independence for the elderly with innovations in elderly housing schemes and typologies (Goh 1991/1992; Daman 1994; Yap and Tan 1998; NUS Senior Circle 1999), possible private sector involvement in augmenting the supply and variety in elderly housing stock (Liyana 1997; Lopez 1997) and financing instruments to aid affordability among the older population (Addae-Dapaah and Leong 1996a, b).

### **The 2000s**

As with every turn of the decade, assessments are made to illuminate changing social structure, demographic profiles as well as evolving needs and aspirations of a

new cohort of elderly. A Committee on Ageing Issues was convened in 2004 and a report was published in 2006 that addressed four key elderly issues: housing, accessibility, care services and opportunities for older people. Reflecting the policy discourse, scholarly research on elderly housing in 2000s began to examine the policy implications of changing demographic structure on elderly living arrangements and caregiving (Chan 2001; Mehta 2006; Chui 2007), the aging baby-boomers and their housing needs and preferences (Chan and Yap 2009). Dedicated research centres on ageing issues were established at universities (e.g. National University of Singapore). Duke-NUS (2008/2009) broad-range study on elderly issues includes a study on the social wellbeing of elderly who age in place.

There is a shift in the state's discourse towards more positive, successful ageing since the 1999 Inter-Ministerial Committee Report on the Ageing Population. It set the tone for a decade of more coordinated national response to address the challenges and opportunities of ageing (Chan 2001; Yap and Kang 2010). The 2000s saw more research on retirement housing and financial provision amidst the effort to address "asset-rich and cash-poor" elderly (McCarthy et al. 2002), and the use of financial instruments to monetise housing equity (Addae-Dapaah and Wong 2001; Chia and Tsui 2005, 2009).

### **Current Situation (2011–2016)**

In the past five years, a growing body of the literature is devoted to reassessing and reframing what "successful ageing" means. There is an evident shift in the body of research from the themes of physical, financial, social needs and requirements of the older person and the means by which housing options can be a part of the set of instruments to support and meet such needs towards a more holistic perspective on "life satisfaction" and "quality of life" for the older adults, enabling them to be independent and to make choices (Yuen 2015a; Mathews and Leong 2014; Thang 2014; Addae-Dapaah and Quah 2014). Mathews and Leong (2014) envisage that "going forward, seniors will expect not just financial sustenance, but quality of life as they age... A big part of what seniors want in having quality of life is having choices and the ability to make them, in other words, to be able to decide how they want to age" (p. 8).

There is also a deepening of research into the diversity in elderly profiles and aspirations, with some research looking from the feminist perspective (Devasahayam 2015; ILC Singapore 2015a, b), differentiating the needs and aspirations of the elderly from different socio-economic backgrounds (Ee 2012; Liang et al. 2014). There are also studies looking into the implications of evolving living arrangements (e.g. Thang and Hong 2015; Thang 2014; Thang and Lim 2012). Chua (2015), Wu (2013), Forrest (2015) explore current and new thinking on housing assets and finance for the elderly.

Below are some of these research themes on housing for older population.

### A. Evolving Socio-demographics and Impacts on Elderly Households and Living Arrangements

Cultural norms and policy direction in Singapore have, at the outset, placed emphasis on Asian family values and the responsibility for the care of the elderly primarily with the individual and family. Lee's (1986) study demonstrates that the family plays a fundamental role in supporting the older person and the older person predominantly shared homes with adult children. This was contrasted with the "low (minimal) level of community and public (sector) participation in the support network of elderly Singaporeans" (p. 239, words in brackets added for clarity). Teo's (1994) paper on Singapore's national policy on the elderly notes the public education programmes such as the Public Awareness Programme on Ageing (PAPA) and the Parent Education Programme (PEP) that were used to reinforce attitudes on filial responsibility, promote family values and good intergenerational relationships, reaffirming that the "family as an institution...is the main caregiver for elderly persons" (p. 416).

Mehta (2006) explains the rationale of the government's concept of "many helping hands" in the Committee of Ageing Report that the support for the elderly falls on the family as his/her "first line of support" and the community via the VWOs as the "second line of support". Where these two arms of support are unable or inadequate in meeting the needs of individual older person, government assistance would come in as a "safety net" to augment support to families and the third sector (p. 45). This family-oriented policy makes its imprint on the living arrangements of the elderly, whereby inter-generational or multi-generational family structure is being encouraged, supported by policy instruments. These instruments include the provision and incentivising (through the giving of priority and subsidies) the purchase of multi-generational flats, providing subsidies for those who apply for public housing in proximity to their aging parents (Mehta 2006) and the employment of foreign domestic worker for long-term care services (Rosario and Rosetti 2012). A recent study shows that as many as 80 % of households with an older person hire foreign domestic workers to care for the elderly (Chan and Matchar 2015).

There are signs that this state of affairs, while still predominant, is unravelling with changing societal pressures and new preferences. Chan and Matchar (2015) observe,

The position of the Singaporean family as the primary provider of elder care has continued today, however, external pressures such as increased longevity, increased female labor force participation, smaller family sizes, delayed child bearing, increasing rates of non marriage and divorce, increasing prevalence of chronic disease, and migration has made it harder for Singaporean families to care for their older adults (Thompson et al. 2012). There is also evidence of a cultural shift; a larger percentage of older adults prefer living on their own and a larger percentage of young adults prefer their independence as well (Singapore National Family Council 2011) (p. 72)...Alternative social and living arrangements are becoming more common with the Baby Boom generation. (p. 76)

The Committee on Ageing Issues Report of 2006 notes that the ageing baby boomers, as compared to past generations of elderly, would be healthier, more independent and active; they are also better educated and higher-skilled, have higher incomes and are more affluent. Chan and Yap's (2009) makes a further distinction between the early and late baby boomers. They found that a smaller proportion of late baby-boomers (born 1955–1964) expect to co-reside with their children and are more amenable to live independently, as compared to the early baby-boomers (born 1947–1954). The late baby-boomers are more open to the idea of living in nursing homes or retirement villages and are also comparatively more likely to move out of their current dwelling as they age.

## **B. Ageing in Place: Issues in Dwelling and Wellbeing**

Ageing in place encapsulates the concept of the older person remaining physically in existing dwelling and relationally within the ambit of his/her family (staying with or close) to his/her family. Singapore uses a broad definition of ageing in place to not only refer to remaining and ageing in the same dwelling but also having the choice to move to a “right-sized” housing within the same residential town or estate, that allows the older person to age in a familiar environment and maintain community networks. It is within this framework of understanding of ageing in place that the following sections will explore the issues of dwelling and wellbeing, and elder-friendly housing and infrastructure in relation to ageing in place.

### ***1.4.1 Neighbourhoods, Social Connection and Elderly Wellbeing***

Studies done on typical public housing neighbourhoods in Singapore generally find that anchoring to a familiar neighbourhood gives a sense of rootedness to place, community and identity, and affords the maintenance of social networks, which all contribute to the elderly's wellbeing and satisfaction with their living environment. An early study by Kong et al. (1996) finds that long time residents of a neighbourhood develop “physical, social and autobiographical insideness”, and in their experience of place as insiders they are not willing to be uprooted from their neighbourhoods as they age (p. 546). Kong et al. (1996) elaborate the benefits of ageing in place for the elderly,

What we have illustrated is that the proximate environment, or the immediate neighborhood, is of tremendous importance to the elderly's continued participation in life. In particular, a friendly environment supports the elderly's ability to negotiate space and their enduring engagement in social networks, which in turn contribute to their sense of self-worth, rootedness, and identity. (p. 546)

In another study, Wu and Chan (2012) examine how the public housing neighbourhood influences social interactions and alleviate social isolation of the older person. The study suggests that the built environment of public housing neighbourhoods has a positive impact on the social interactions of the older person. The elderly who dwells in such environment and also daily participates in neighbourhood events are found to be at a substantially lower risk of isolation (p. 1).

In a specific study on Bukit Merah, a matured public housing estate in Singapore, Chong et al. (2015) examine how the older adults' use of social and public spaces would affect their perception of their living environment and their psychosocial wellbeing. They found that "participants who were more satisfied with the location and availability of outdoor support around their house tended to feel less depressed. Furthermore, those who perceived themselves as independent and able to manage themselves and their house tend to contribute more to their family and community" (p. 274).

### ***1.4.2 Living Alone, Age-Segregation and Elderly Wellbeing***

There is an increasing prevalence of singlehood among younger baby boomers and an increase in the proportion of one-person households among the older population (see Introduction). The HDB Sample Household Survey 2013 (HDB 2014) reports an increase of older residents living alone. The indication is that more elderly are becoming more independent and are choosing voluntarily to live alone. Researchers are weighing into the study of the various concerns and opportunities of this new reality of increasing numbers of single elderly and the elderly who live alone. It should be noted that elderly singles do not necessarily live alone, but with other elderly or with relatives.

Mehta (2006) notes that the older person who is single, divorced or separated are more likely to live alone, be in financially poorer conditions, and suffer from poor health. Chan et al. (2011) study uncovers that "living alone and weak social networks outside the household were associated with higher depressive symptom scores among both older men and women" (p. 638). A recent update conducted on elderly living alone as part of the Singapore Longitudinal Ageing Studies (Ng et al. 2015) reports that "living alone was associated with increased mortality, independently of marital, health and other variables" (p. 1). As early as 1998, Yap and Tan have posited that the ageing baby-boomer generation has opportunities unavailable to their previous counterparts for independent living, afforded by a housing industry that is evolving to supply these needs.

Several local studies on elderly housing have examined the Studio Apartment (SA) typology (it has been the main type of purpose-built elderly housing since 1998) in relation to the wellbeing of the elderly who live in such housing. Such studies are instructive as they surface the shortcomings of various aspects of these

apartments and provide learning points to improve elderly housing provision and undergird the necessity to think of elderly housing in more physically and socially integrative way. The advocacy is to think of elderly housing beyond the provision of a roof over their heads but in a holistic way that takes into consideration the multiple aspects of their wellbeing.

For example, Addae-Dapaah (2008) finds that age-segregation is “injurious to the personal well-being” of the elderly. While acknowledging that Studio Apartments provide a supportive physical environment, Addae-Dapaah argues that the negative effects of its environment fall short in providing conducive “psychological and social environments, which result from the monotonic social group that breeds morbidity, a sense of rejection and despair” (p. 152). Importantly, about three-quarters of the respondents of the study who are all dwellers in Studio Apartments report that they prefer age integration to age segregation (p. 152). Thang and Hong (2015) further suggest that “while SA living promotes independence, it could also lead to limits in social life and support as one moves to live alone” (p. 252).

In another study conducted on residents of public rental housing, Addae-Dapaah and Quah (2014) report low life satisfaction of elderly living in these housing. The demographic profile of elderly resident renters of Studio Apartment is likely to be quite distinct from those Studio Apartment elderly residents who had purchased their housing; the former group tends to be from low income group who are unable to afford housing or pay market rental rates and thus rely on highly subsidised rental housing. The key factors that score low in their findings include “elderly-friendly features and amenities in the housing unit and precinct, social inclusion, workmanship (i.e. the quality of rental flat) and physical condition (i.e. the ability to move about)” (p. 1071).

Thang (2014) lauds the practice of giving priority to the elderly to move to Studio Apartments within the estate of their existing dwelling as that would help to maintain the social environment and avoid the need of having to adapt to a new place. Her study further expresses optimism that policy and practice adjustments towards design inclusivity and enhanced integration of Studio Apartment with other typologies would “lead to a new hybrid style of living for seniors who desire independence and a comfortable distance from their children, yet continue to maintain close familial relationships” (p. 75). It is important that the spaces inhabited by the elderly, not just dwelling but also surrounding environment, become intergenerational spaces that support social interactions.

### ***1.4.3 Elder-Friendly Housing and Infrastructure***

Another key area of research in ageing in place pertains to elder-friendly housing and infrastructure. Elder-friendly features in apartments, whether in purpose-built



elderly housing or through housing modifications, help the elderly and the wheelchair-bound, to manoeuvre more safely and easily within their dwelling. Elder-friendly infrastructure at the block and neighbourhood scales not only addresses daily accessibility issues but also supports the older person's quality of life, affording the individual a greater degree of independence. It allows him/her to continue to take part in daily activities in the neighbourhood and maintain his/her engagements with the community as he/she ages.

### 1.4.3.1 Elder-Friendly Housing Features

At a time when the elderly studio apartments became a new purpose-built housing option for the elderly and before housing modification schemes such as the Home Improvement Programme (from 2007) and Enhance for Active Seniors (since 2013) were in place, Addae-Dapaah and Wong (2001) studied the basis for giving policy and funding preference to the latter. Their study included two surveys that assessed the housing needs and residential mobility of the elderly and their preference and ability to afford various elder-friendly features for their homes. They concluded that most elderly in Singapore preferred to age in place, and that home modification as a means to level up existing dwelling places to the needs of the elderly inhabitant would be a more pragmatic and qualitatively better option than having new purpose-built housing for the majority of the aging population.

The National Survey of Senior Citizens 2011 (Kang et al. 2013) reported that there is still low proportion (about 25 %) of elderly respondents who have elder-friendly fixtures in their homes, with the 1–2 room flat types (many of such being purpose-built elderly housing units) having a higher proportion (about 50 %) of such fittings (Table 1.7).

A Housing Audit Checklist (adapted from World Health Organisation Global Age-friendly Cities and Universal Design), developed at the Lee Kuan Yew Centre for Innovative Cities, Singapore University of Technology and Design, seeks to assess the older residents' perceptions on five components of their housing: accessibility and inclusivity; adaptability and flexibility; maintenance, services and affordability; privacy, comfort and security; sustainability and liveability (Yuen 2015b).

**Table 1.7** Elder-friendly features in homes

| Contain elder friendly features | All respondents (%) | Type of dwelling (%) |                            |                       |                       |                                 |                    |
|---------------------------------|---------------------|----------------------|----------------------------|-----------------------|-----------------------|---------------------------------|--------------------|
|                                 |                     | Public flat          | 1 to 2-room public housing | 3-room public housing | 4-room public housing | 5-room or larger public housing | Private flat/house |
| Yes                             | 25.9                | 26.0                 | 48.5                       | 25.5                  | 20.7                  | 26.0                            | 24.8               |
| No                              | 74.2                | 74.0                 | 51.5                       | 74.5                  | 79.3                  | 74.0                            | 75.2               |

Source Kang et al. (2013), p. 22

### 1.4.3.2 Elder-Friendly Neighbourhood Design

One of the early papers by Tham (1989) examines how the assessment of social, emotional, economic and physical needs of the older adults can inform the design and architecture of housing and facilities to make them more elder-friendly. In a recent survey, the HDB Sample Household Survey (HDB 2014) assessed the satisfaction level of older public housing residents (55+) on 3 key aspects of public housing estate facilities: physical living environment, estate facilities, and residential mobility and housing aspiration (intention to move). The findings show high levels of satisfaction, with 95 and 96 % of households expressing satisfaction with their flats and neighbourhoods respectively. Top “most-liked aspects” of public housing living are location, transportation network and provision of estate facilities. These pertain predominantly to the physical urban planning of the estates. Top “most-disliked aspects” are with the levels of cleanliness and maintenance, noise and weather protection (provision of covered linkways, etc.).

Koh et al. (2014) seeks to identify “infrastructural features, and social demographic and situational variables” that affect or contribute to elderly mobility in Singapore’s densely populated neighbourhoods (p. 127). Using walking duration as a measurement of mobility, the authors found that the key contributing factors are “whether the elderly is working, the elderly’s perception of road crossing delay in his/her neighbourhood, and his/her perceived availability of social interaction areas, shops and eateries nearby” (p. 131). Stamenovic (2012) suggests that improvements in designing supportive environments that enable independent living for the elderly (through holistic, cross-disciplinary and user-participatory design approaches) as well as a greater emphasis on connectedness between the apartment-neighbourhood-city (micro-meso-macro) spatial systems are important considerations in elder-friendly neighbourhood design.

### C. Housing Finance, Affordability, Monetising Assets

Another common line of research on elderly housing has been in the area of housing finance, particularly the unlocking of housing equity to supplement retirement income. Since the mid-1990s, there has been research on addressing the “asset-rich and cash poor” predicament of elderly homeowners who have accumulated most of their wealth in housing assets but lack the financial liquidity to support their retirement (Addae-Dapaah and Leong 1996a; McCarthy et al. 2002; Chia and Tsui 2005). There is generally a lack of financial mechanism to unlock home equity up until mid- to late-2000s when the market and the government through the HDB introduced instruments such as reverse mortgage and lease buyback scheme respectively.

An early research by Addae-Dapaah and Leong (1996a) explores the applicability of what they termed as the home equity conversion schemes to allow the elderly to become eligible for loans based on their home equity values instead of income. Chia and Tsui (2005) assess the viability of a reverse mortgage market, with the HDB functioning as a supplier of reverse mortgage so that such instruments may be harnessed as a source of financing retirement income for homeowners. Addae-Dapaah and Leong (1996b) studies the “creative housing finance schemes” as a means to help the older person who wants to move into a purpose-built flat for the elderly.

Beyond financial mechanisms, studies have been done on how housing policies can be shaped to address the issue of housing affordability and supplement elderly retirement income. The study by McCarthy et al. (2002) would seem prescient today as it has suggested that in addition to broadening the availability of financial instruments, the liberalisation of housing policy could allow homeowners to rent out flats or rooms (which was then not permitted) and opening an option to allow the elderly to down-size their housing would all be helpful for the elderly to release housing capital to supplement their retirement. Both of these recommendations are allowed today and the latter is supported by the Silver Housing Bonus scheme.

Chia and Tsui (2009) compare different instruments—subletting, lease buyback scheme (LBS), reverse mortgage and downsizing—for monetising housing equity to generate retirement income against the trade-offs (retirement adequacy, leaving a bequest and ageing in place). The findings indicate that the lease buyback and subletting options do best in providing retirement income, allowing the older person to age in the same dwelling while retaining the asset for bequest, albeit in a limited way for the lease buyback scheme. Wu (2013) furthers the study of these asset monetising options, in particular, with the introduction of the Silver Housing Bonus and the refinement of the LBS instrument and its combination with Central Provident Fund Life Scheme.

The rest of this volume contains an annotated bibliography of the research, published and unpublished, on Singapore’s housing for the older population. As mentioned, the bibliography also lists selected work on elderly housing in other Asian and developed countries.

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# Chapter 2

## Annotated Bibliography

### 2.1 Overview

This annotated bibliography is an attempt to compile a comprehensive (though not exhaustive) bibliography listing published and unpublished works on elderly housing. It focuses on featuring books, journals, articles and research pertaining to housing for the older population, with emphasis on Singapore. It also contains additional citations covering global studies, which will provide insights that may be useful for a better understanding on trends in Asia, Canada, United States of America and United Kingdom. The references have been arranged in a chronological order under the following sections:

- Section 1: Singapore
- Section 2: Asia (except Singapore)
- Section 3: Canada, United States and United Kingdom
- Section 4: General (Other Regional Works).

The range of literature available reflects the importance of public housing in the provision of housing for older population in Singapore. A number of the expositions discussed housing finance and quality of life issues. It also highlights the need for a barrier-free living environment.

As alluded to earlier, provision of public housing for the ageing population in Singapore started in 1997 with the announcement by the Singapore Housing and Development Board (HDB) to build studio apartments for the elderly. The literature search highlights that various schemes have been introduced since then and adjustments made to previously established schemes as deemed necessary.

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Compiled by SUTD Library in support of the Lee Li Ming Programme in Ageing Urbanism.

Citations of works related to alternative forms of housing for the elderly requiring continuous care and medical attention have not been included in this bibliography though it is an area of interest in the terms of housing the elderly in Singapore.

It is believed that this bibliography would serve as a good starting reference point for those interested in initiatives and discussions relating to the housing of older people in not only Singapore but also key developments in other Asian countries and other parts of the world.

## 2.2 Singapore

### 2.2.1 Books and Journal Articles

**Boey, Y. M. (1991). Future housing for the elderly. *The Singapore Professionals*, 15(4), 29–35.**

Boey discusses the implications of an ageing population on the planning of new towns by Singapore Housing and Development Board. The need for more amenities for the elderly are also covered.

**Zulkifli, B. (1992). Housing for the aged. *Property Link*, 16, 18–20.**

This article highlights that as viable alternatives to old folks' homes, Singapore will need a wider range of housing for the aged. Examples include smaller apartments with facilities conducive to those with impaired mobility, which could allow the aged to use the equity from their previous homes for retirement.

**Teo, D. (1993). Retirement villages by the private sector. *Property Link*, 24, 42–43.**

The author discusses the available types of specially designed homes for the ageing population, in particular, catering to the group of elderly who were financially capable to afford such an option. The article also highlights the difficulties in terms of implementation and suggests that the Government reviews policies to address this issue.

**Danam, J. (1994). Housing for the elderly: A growing concern. *Property Review*, Apr/May, 14–19.**

This article provides insights into the key elements of elder-friendly homes, which senior citizens would find affordable and favourable. It also reviews the housing types such as sheltered housing, congregate housing and retirement communities. It addresses arrangements that cover house sharing and granny apartments. Financial schemes such as reverse annuity mortgages and maturity loans available for older people in other countries are also highlighted.

**Mehta, K., Lee, A.E.Y., & Osman, M. M. (1995). Living arrangements of the elderly in Singapore: Cultural norms in transition. *Journal of Cross-Cultural Gerontology*, 10(1-2), 113–143.**

This paper discusses the cultural factors affecting housing for older people in the three major ethnic groups of Singapore (Chinese, Indian and Malay). Highlights include the external influences that impact the changing patterns of living arrangements.

**Addae-Dapaah, K., & Leong, K. M. (1996). Housing finance for the ageing Singapore population: The potential of the Home Equity Conversion Scheme. *Habitat International*, 20(1), 109–120.**

This paper examines some of the housing-finance schemes in Western countries and discusses their applicability in the context of Singapore, especially the Home Equity Conversion Scheme (HECS). It argues that among the different types of HECS, the Sale-Leaseback scheme might be the best in overcoming financial difficulties faced by many senior citizens in Singapore.

**Addae-Dapaah, K. & Leong, K.M. (1996) Housing finance for the ageing Singapore population: The potential of creative housing finance schemes. *Habitat International*, 20(4), 625-634.**

This paper reviews creative housing finance schemes in Western countries, which help the elderly afford retirement housing, and further examines the applicability of such schemes in Singapore's socio-economic and cultural context as a means to help seniors who want purchase a purpose-built flat for the elderly.

**Harrison, J. (1997). Housing for the ageing population of Singapore. *Ageing International*, 23(3/4), 32–48.**

This paper argues that with increasing population ageing, there is a need for Singapore to look at ways to better accommodate the needs of the older groups in its population. It reviews some of the initiatives and the ways in which elderly housing problems can be dealt with.

**Harrison, J. (1997). Housing Singapore's frail elderly in the next millennium. *Singapore Medical Journal*, 38(10), 415–417.**

This paper provides an overview of how Singapore is addressing the housing needs of the elderly, especially the frail. Initiatives such as the congregate housing concept as well as renewal and redevelopment schemes are reviewed. The impact of the changing pattern of the extended family system on future housing needs of the elderly is also addressed.

**National University of Singapore Society (NUSS) Senior Circle. (1999). Housing senior Singaporeans: Public forum, 25 Feb 1999. In *Housing Senior Singaporeans*. Singapore: National University of Singapore Society.**

This forum proceedings includes discussions on the living arrangement and provision of housing for the elderly in Singapore. The coverage includes the Housing and Development Board schemes and other issues like assisted living facilities and care management services.

**Ang, S. L. & Lee, E. (2000) The old-old in Singapore, Statistics Singapore Newsletter.**

This article provides statistics on Singapore's old-old population, defined as those above 85, for the period from 1970 to 1999. The data includes socio-economic, housing and household categories.

**Addae-Dapaah, K., & Wong, G. K. M. (2001). Housing and the elderly in Singapore - Financial in Singapore and the elderly and housing of life implications of ageing in place quality. *Journal of Housing and the Built Environment*, 16(2), 153–178.**

This paper presents a review of the literature on the demography, housing and sources of income of older population in Singapore. The housing options available for them are reviewed. The paper posits that making changes to the home rather than new elder-friendly apartments might be a better solution to improving the quality of life of the elderly.

**Addae-Dapaah, K. (2002). Formal Housing Finance and Elderly in Singapore. In Datta, K. & Jones, G. A. (Eds.), *Housing and Finance in Developing Countries* (pp. 89-100). London: Routledge.**

This book chapter assesses how policies are addressing the housing finance problems faced by the elderly in Singapore. This is an age group with more women than men who have been less financially active and hence, ill-prepared to deal with such issues. Surveys conducted in 1994 and 1995 provide the data for analysing how well the elderly are taking to the schemes implemented for their benefit.

**Addae-Dapaah, K. (2002). Growing old affordably. *Innovation*, 3(2), 24–25.**

This paper highlights possible financial-aid schemes available for modifying the homes of older citizens in Singapore's public housing estates. Options discussed include sale-leaseback, roll-up deferred loan, extending the existing flat-upgrading programme to include home modifications and a shared appreciation scheme with financial institutions.

**Addae-Dapaah K., & Wong, G. K. M. (2002). Ageing in place - Is home modification a viable solution for Singapore? *International Journal for Housing Science and Its Applications*, 26(1), 47–66.**

This paper examines the possible improvements to make existing public housing more elder-friendly. The paper also considers the ability of older Singaporeans to pay for housing and explores possible financing methods that could support payment for housing adaptations.

**McCarthy D., Mitchell, O. S. and Piggott, J. (2002). Asset rich and cash poor: retirement provision and housing policy in Singapore, *Journal of Pensions Economics and Finance*, 1(3), 197-222.**

This paper examines the how the Singapore Central Provident Fund, the national compulsory retirement savings scheme, has had profound influence in shaping housing consumption and on personal wealth and asset mix in retirement.

**Fong-Chong, A. (2003). Tampines 3-in-1 Family Centre, Singapore. *Journal of Intergenerational Relationships*, 1(1), 169-171.**

This article gives an insight on one of the efforts in housing for the aged, Tampines 3-in-1 family centre, which conducts inter-generational programming to re-engage three generations. The centre organises activities to bring together diverse groups of people such as pre-schoolers, primary school students and senior adults in a family-type setting so that they can keep themselves busy with each other's company while their caregivers are at work.

**Chia, N. & Tsui A. K. C. (2005) Reverse mortgages as retirement financing instrument: an option for "asset-rich and cash-poor" Singaporeans, SCAPE Working Paper Series, Paper No. 2005/03, Department of Economics, National University of Singapore.**

This article assess the viability of reverse mortgages as a retirement financing instrument that can help asset-rich and cash-poor Singaporeans unlock equity from their homes to supplement retirement income.

**Building and Construction Authority. (2007). *Universal Design Guidelines, 2007*. Singapore: Building and Construction Authority.**

Issued by Singapore's building authority, the book serves as the Universal Design guide for the building industry in Singapore. The move towards Universal Design has been gaining acceptance in Singapore so as to cater to the growing greying population. The recommendations are applicable to many types of buildings.

**Chui, E. (2007) Changing norms and pragmatics of co-residences in East Asian countries. *International Journal of Sociology of the Family*, 33(1), 1-24.**

The paper asserts that changing socio-economic configurations in the East Asian countries have given rise shifts in family living arrangements, as co-residence of ageing parents with their adult children, which has been previously prevalent becomes increasing less so. It suggests that the state would need to take on a greater role in welfare provision.

**Addae-Dapaah, K. (2008). Age segregation and the quality of life of the elderly people in studio apartments. *Journal of Housing For the Elderly*, 22(1-2), 127-161.**

This paper examines the impact of age-segregated housing on the quality of life of older adults in Singapore. It reviews the relevant literature and analyses the results

of survey data from 390 elderly respondents in high-rise public housing studio apartments. Age segregation is shown to adversely affect the quality of life of the elderly residents in the studio apartments.

**Asher, M. G., & Nandy, A. (2008). Singapore's policy responses to ageing, inequality and poverty: An assessment. *International Social Security Review*, 61(1), 41–60.**

This article argues that Singapore has the means and capabilities to forge a modern multi-tier social security system. At the individual level, individuals and their families are faced with risks when providing finance for healthcare, retirement and short-term income support.

**Chia, N., & Tsui, A. K. C. (2009). Monetizing housing equity to generate retirement incomes. Singapore Centre for Applied and Policy Economics *SCAPE Working Paper Series*, 2009/01, 1–31.**

This paper compares different ways to monetise housing assets in Singapore. These include the Lease Buyback Scheme, subletting, downsizing and reverse mortgage.

**Wong, Y. S., & Verbrugge, L. M. (2009). Living alone: Elderly Chinese Singaporeans. *Journal of Cross-Cultural Gerontology*, 24(3), 209–24.**

This paper investigates the sociocultural and personal factors that contribute to the elderly's "physical and social isolation", their coping strategies and preferred living arrangements. It studies a group of older Chinese Singaporeans (aged 65 and older) who live alone. Despite the potential difficulties in living alone, some of the elderly may actually prefer to live alone, something which they are more accustomed to.

**Chan, A., Malhotra, C., Malhotra, R., & Ostbye, T. (2011). Living arrangements, social networks and depressive symptoms among older men and women in Singapore. *International Journal of Geriatric Psychiatry*, 26(6), 630–639.**

This paper examines the relationship between "living arrangements and social networks outside the household" among elderly men and women. It investigates the correlation between living arrangements and the signs of depression experienced by the elderly, with varying strengths of social networks.

**Wong, Y. M., & Teo, Z. (2011). The elderly in Singapore. *Statistics Singapore Newsletter*, Sep 1-11.**

This article reports on the statistics of Singapore's resident population aged 65 and older. Detailed profiles include, but are not limited to, marital status, education, language most frequently spoken at home and living arrangement. The profiles are based on data from Singapore Population Census 2010.

**Bozovic-Stamenovic, R. (2012). New Issues in Singapore public housing from elderly perspective: Case study. *TECHNE, Journal of Technology for Architecture and Environment*, 4, 103–109.**

This paper explores various issues concerning public housing in Singapore as the population ages. The author examines the current high density model and proposes some new ideas to counter the challenges of high rise, high density development, consumerism and branding. These include aging in place, environmentalism and sustainability, and mobility.

**Thang L. L. & Lim, E. (2012). Seniors living alone. Report for Fei Yue Community Service. Singapore: National Council of Social Service (NCSS) and Singapore Tote Board.**

The report seeks to surface the problems, concerns and coping strategies of seniors living alone in Singapore. Additionally the research looks into role of senior activity centres, as these centres serve to bring services and activities into the neighbourhoods to reach the elderly.

**Wu, T., & Chan, A. (2012). Families, friends and the neighbourhood of older adults: Evidence from public housing in Singapore. *Journal of Aging Research*, 2012, 1–8.**

This paper explores the influence of Singapore's public housing estates on the social lives of the resident older population, in particular, their effect on social isolation. It argues that public housing has positive effects for this group when there is daily participation in public neighbourhood events.

**Singapore. Building and Construction Authority. (2013). *Code on Accessibility in the Built Environment 2013*. Singapore: Building and Construction Authority.**

This code contains the latest requirements for elder-friendly routes and corridors. Since it began in 1990, the code has been constantly updated to be comparable with international standards and the evolving needs of the local community. This is the 5th edition of the code.

**Wu, W. N. (2013). *Housing: How should Singapore's Housing and Development Board (HDB) help Older People Monetise their Housing Assets and Age in Place?* Singapore: Lee Kuan Yew School of Public Policy.**

This paper explores how the elderly can get cash from their housing assets in the context of Singapore's rapidly ageing population. It also discusses the difficulty of ensuring that the elderly remain income self-sufficient in retirement.

**Addae-Dapaah, K., & Quah, S. J. (2014). Life satisfaction among elderly households in public rental housing in Singapore. *Health*, 6,1057-1076.**

The paper investigates the living and housing satisfaction levels of poor elderly Singaporean households residing in social housing. The study reports very low levels of life satisfaction of this group and suggests that home modification that meet the needs of the elderly will significantly improve their life. It presents an



argument that the government should finance and undertake home modifications for these needy elderly, who would not otherwise be able to afford them.

**Housing and Development Board (HDB) (2014). Public housing in Singapore: Social Wellbeing of HDB Communities - HDB Sample Household Survey 2013. Singapore: Housing Development Board.**

The HDB Sample Household Surveys (SHS) are large scale surveys conducted every five years to gather residents' feedback on their level of satisfaction with their flats, access to estate facilities, and sense of belonging to their community, etc.

**Koh, W. L., & Lee, Z. Y. (2014). Household living arrangement in Singapore, 1990-2010. *Statistics Singapore Newsletter, March 2014*. Retrieved from <http://www.singstat.gov.sg/docs/default-source/default-document-library/publications/newsletter/ssnmar2014.pdf>.**

This article highlights the changing demographics of Singaporeans by focusing on household living arrangement between 1990 and 2010. The data are derived from the Singapore Population Census (1990, 2000 and 2010) and the General Household Surveys (1995 and 2005) collated by the Singapore Department of Statistics.

**Mathews, M., & Leong, T. Y. H. (2014). Towards ageing well: Aspirations, challenges and initiatives. *IPS Exchange No. 2*. Retrieved from [http://lkyspp.nus.edu.sg/ips/wp-content/uploads/sites/2/2014/10/c3A\\_Web\\_Final\\_130115.pdf](http://lkyspp.nus.edu.sg/ips/wp-content/uploads/sites/2/2014/10/c3A_Web_Final_130115.pdf)**

This research is initiated and commissioned by the Council of Third Age. It focuses on three aspects of ageing well, namely, employability, lifelong learning and social gerontology. It reviews the initiatives implemented to achieve these ends.

**Mathews, M., & Straughan, T. P. (2014). Results from the perception and attitudes towards ageing and seniors. Working Paper No. 22. Retrieved from [http://lkyspp.nus.edu.sg/ips/wp-content/uploads/sites/2/2014/11/5\\_Results-From-The-Perception-and-Attitudes-Towards-Ageing-Seniors-Survey\\_3-mathews.pdf](http://lkyspp.nus.edu.sg/ips/wp-content/uploads/sites/2/2014/11/5_Results-From-The-Perception-and-Attitudes-Towards-Ageing-Seniors-Survey_3-mathews.pdf)**

This paper considers the social and emotional dimensions of the older population. It contains the results of the Perception and Attitudes towards Ageing and Seniors (PATAS) study concluded in early 2014. Findings include constituents of successful ageing, aids to achieve successful ageing, outlook on ageing and future intentions.

**Thang L. L. (2014). Living independently, living well: Seniors living in Housing and Development Board studio apartments in Singapore. *Senri Ethnological Studies* 87, 59-78.**

This paper examines Housing and Development Board studio apartments (SAs) as an alternative form of housing for the elderly in Singapore who live independently. It weighs the benefits of the SAs, including how it provides an option for the elderly to downsize to a smaller apartment, strengthening their financial security. The study

also looks into how the provision of elderly friendly features and activity centres can help to support elderly living alone.

**Chong, K. H., Yow, W. Q., Loo, D., & Patricia, F. (2015). Psychosocial well-being of the elderly and their perception of matured estate in Singapore. *Journal of Housing for the Elderly*, 29(3), 259-297.**

This paper reports a research to investigate the correlation between the elderly's psychosocial wellbeing and the various elements of an age-friendly community. It found that friendships formed in these spaces and convenience of amenities contribute to older people's perception of their current residences. The authors called for integrated urban design to improve the elderly's psychosocial wellbeing.

**Chua, B. H. (2015). Financialising public housing as an asset for retirement in Singapore. *International Journal of Housing Policy*, 15(1), 27-42.**

More than 85 % of Singaporean households live in public housing. Many use their Central Provident Fund (retirement) savings to pay the mortgage when buying public housing, which also serves as an investment for their silver years after retirement. This article discusses the outcomes and systemic contradictions of such a system and related housing policy.

**Ng T. P., Jin, A., Feng, L., Nyunt, M. S. Z., Chow, K. Y., Feng, L. & Fong, N. P. (2015). Mortality of older persons living alone: Singapore longitudinal ageing studies. *BMC Geriatrics*, 15, 126.**

This paper investigates the association of living alone with mortality among older persons, and finds positive association between the two, independently of marital, health and other variables.

**Thang L. L. and Hong S. (2015). Ageing-in-place in studio apartments in Singapore: maintaining independence in community living. *Asia Pacific Journal of Social Work and Development*, 25(4), 250-263.**

This paper looks into three aspects—self-care management, social support and use of social services—of coping strategies that the elderly who live alone in studio apartments employ, and finds that they fare better in them than those who live with others.

### **2.2.2 Dissertations and Theses (Unpublished)**

**Lee, S. M. I. (1986). *Community housing for the elderly*. Department of Architecture, School of Design and Environment, National University of Singapore.**

This thesis examines findings from two surveys and case studies from old age homes in Singapore that showed that programmes, facilities, services and planning

are crucial to designing housing for the elderly. It proposes to maintain and integrate the roles and accommodation of the elderly in the community through appropriate site planning and design.

**Jeow, A. E. (1987).** *Elderly housing as an infill in HDB housing estate.* Department of Architecture, School of Design and Environment, National University of Singapore.

This thesis discusses the relocation of the elderly within the Singapore public housing (HDB) environment, without separating them from others in the community. It explains what infill design could do to the public housing community.

**Jasmi, T. (1988).** *Condominium housing for the independence elderly.* School of Building & Estate Management, National University of Singapore.

This thesis examines the demand for private condominium housing for the elderly as the demographic of Singapore society changes. It identifies various types of services that could be offered including the provision of warden (residential counsellor), medical services, housekeeping and laundry services, security services and emergency services, social, recreational and education services and transportation services.

**Chew, P. H. (1990).** *Age-integrated condominium housing for the elderly.* School of Building & Estate Management, National University of Singapore.

This study explores Singaporeans' preferences for housing arrangements and features for the elderly within a condominium setting for the more affluent individuals. It proposes an age-integrated approach as opposed to age-segregation. A survey was conducted to find out respondents' preferred style of living and environment as well as the required facilities, services and recreational activities.

**Tan, C. A. (1996).** *Greying in 2015 – Housing for the elderly (Design for ageing and habitability).* Department of Architecture, School of Design and Environment, National University of Singapore.

This thesis explores programmes that could be implemented to assist the frail and low-income elderly who wish to age in place in the community with appropriate support services without moving into institutions. The writer argues that such programmes could only be successful when they are locally conceived and designed to meet not just the environmental needs of the elderly residents but also address their social psychological issues at the same time.

**Loh, Y. C. M. (1997).** *The private housing needs of the elderly in Singapore.* Department of Real Estate, School of Design and Environment, National University of Singapore.

This thesis examines private housing needs of the elderly and concludes that such needs differ from those offered by the public sector. A survey was done on 150 elderly private housing residents. The survey found that factors such as floor

placement, facilities, home size are among the main needs to be met by private housing developers.

**Tan, Y. S. J. (1998).** *Studio flats for the independent elderly.* Department of Real Estate, School of Design and Environment, National University of Singapore.

This thesis reviews the studio flat scheme first mooted in February 1997. The study found that with the increasing number of elderly who appreciate independent living, the better designed studio flats with elder-friendly features are well received. The elderly who would not consider the studio flats are often deterred by price, flat size and lack of financial security.

**Choi, C. S. (2000).** *Housing options for the elderly people in Singapore congregate housing.* Department of Architecture, School of Design and Environment, National University of Singapore.

This thesis reviews the feasibility and benefits of congregate housing for the elderly as an option to institutional homes. Benefits listed include purpose-built environment, which provided facilities and support for everyday needs and opportunities for more social interaction. The proposal is supported by three case studies in existing neighbourhoods.

**Loh, F. R. C. (2001).** *Housing the elderly in Singapore: A pragmatic approach.* Department of Real Estate, School of Design and Environment, National University of Singapore.

The study reviewed alternative housing options such as granny flats, multi-generational flats and studio apartments and concluded that they are not popular with the elderly. Recommendations highlight home modifications for the elderly as a preferred approach to meet the wish of those preferring to age in place. The elderly may need financial assistance for home modifications. The government could assist by offering reverse mortgage or provide subsidies to the elderly.

**Wong, T. F. (2001).** *Housing alternatives for the elderly persons in Singapore: An investigation into the Studio Apartments and their environment.* Department of Architecture, School of Design and Environment, National University of Singapore.

This thesis reviews the Studio Apartment scheme introduced by the Housing and Development Board in late 1997. The study concludes that there are merits to the scheme in terms of financial, social and community, and design aspects. The developer has to be mindful of potential problems such as the lack of support services, homogenous nature in terms of age groups of the residents, lack of social interaction and community involvement, security issues and financing the construction of these apartments.

**Chew, M. H. (2003).** *Mixed development @ The Waterfront: Alternative housing for the future elderly.* Department of Architecture, School of Design and Environment, National University of Singapore.

This thesis appraises the housing stock of flats built by 2003 and concluded that they are not built to cope with the changing demographics of an ageing population as most are constructed during the 1970–1980s to fulfill the need of an increasing population then. To enable the seniors to age in place, the writer proposes housing alternatives that incorporate universal design, social memories and the sense of history and security in a mixed development such as residential and commercial developments at Robertson Quay, Singapore.

**Fun, L. E. (2003).** *Home Equity and retirement planning for HDB elderly households.* Department of Real Estate, School of Design and Environment, National University of Singapore.

This thesis reveals that using home equity through reverse mortgage scheme as a second source of retirement savings other than their Central Provident Fund savings has not been well received. The main reason being that many elderly homeowners prefer to stay on in their existing home and thus, having a lower or higher level of equity have no/little impact on their choice of retirement home.

**Lim, Y. J. (2003).** *A study on elderly housing in Singapore: A qualitative approach.* Department of Real Estate, School of Design and Environment, National University of Singapore.

This thesis attempts to find out if the housing choices available then are sufficient to serve the needs of the elderly generation. Among the options available, the Studio Apartments are preferred. Factors influencing the older person's housing choice include: home ownership, security, independence, freedom and confidence, and community bonding.

**Thong, S. P. (2003).** *Rental flats – An elderly-friendly environment.* Department of Real Estate, School of Design and Environment, National University of Singapore.

This thesis reviews the implementation of elder-friendly features in one-room rental flats. These features are well received as they improve the living conditions, allow the residents to age in place and maintain their independence. The writer proposes to introduce such projects to other public house types to improve the living conditions of older residents.

**Yio, Y. H. (2003).** *Reassessing of the neighbourhood for an ageing population – A case study on two public housing estates.* Department of Architecture, School of Design and Environment, National University of Singapore.

This thesis assesses the suitability of the neighbourhood as a communal social space for the ageing population by studying two neighbourhoods in Singapore—Toa Payoh and Tampines. While most have deemed housing as a successful endeavour

in Singapore, the writer argues that these neighbourhoods have failed to meet the developmental needs of the current older population and do not function effectively as a supportive social system.

**Chan, M. Y. (2004).** *Multi-service village for the elderly – Creating inter-dependence among the elderly in Singapore.* Department of Architecture, School of Design and Environment, National University of Singapore.

This thesis proposes an alternative type of elderly housing option by creating an environment that allows the fit older resident to volunteer at the daycare and nursing wing. This not only eases the strain on stretched nursing care for the elderly but also would create a sense of independence for the fit elderly, encouraging them to form meaningful relationships with peers and benefit psychologically. The writer proposes to achieve these through architectural design, which would allow communal areas to be “porous”, fostering circulation and services as well as allow environmental control.

**Goh, S. I. (2004).** *Integrative elderly living.* Department of Architecture, School of Design and Environment, National University of Singapore.

This thesis examines the inherent problems of standalone Studio Apartments for the elderly and proposes an ‘integrative living environment’ that would encourage elderly interaction with family and peers. Although standalone Studio Apartments design features are elder-friendly, they tend to segregate the older adults from their extended families and pose security problem for the elderly. Independent living should not be mistaken as segregated living. Good health-promoting environment for the elderly should encourage independence and dignity, integration and participation, and care for the elderly within their living precincts.

**Kuan, L. I. C. (2004).** *Factors affecting housing affordability for elderly homeowners in Singapore.* Department of Real Estate, School of Design and Environment, National University of Singapore.

This thesis identifies five major factors that affect housing affordability among the older population. The study reveals that each factor affected the affordability of various property types for the elderly differently. The five factors are: purchase price, mortgage terms, amount of cash used to top up monthly mortgage repayments, cash used for down payment and whether all the Central Provident Fund savings in one’s Ordinary Account have been used up for monthly mortgage repayments.

**Patt, C. P. (2004).** *Satisfaction level of the elderly in Housing and Development Board main upgrading programme.* Department of Building, School of Design and Environment, National University of Singapore.

This thesis reviews the provision of features under the Housing and Development Board main upgrading programme among elderly occupants. It reveals that the elderly residents are satisfied with the elder-friendly features within the flats, block

and vicinity. The upgrading programme allows the older person to continue to live in a familiar home setting while being provided with elder-friendly facilities and support.

**Lee, S. M. J. (2005).** *Evaluation of the pilot studio apartment scheme for the elderly.* Department of Real Estate, School of Design and Environment, National University of Singapore.

This thesis examines the Studio Apartment scheme announced in 1997. While residents express satisfaction with the scheme, the study proposes changes to the scheme such as modifying the criteria to allow more elderly to be eligible should they prefer to live on their own, allow lease terms to be extended, pro-rate the remaining term of leases and refund the amount to the family members and allow single elderly persons to purchase these flats.

**Ang, W. H. (2007).** *Reclaiming lost ground: Accommodating the asset-rich-cash-poor elderly on the ground plane.* Department of Architecture, School of Design and Environment, National University of Singapore.

This thesis reviews the implementation of the Selective En-bloc Redevelopment Scheme with mixed flat types including Studio Apartments, which are undertaken to enable the asset-rich-cash-poor elderly residents to have more cash in hand for their retirement needs. However, such a move appears to run counter to the principles of ageing in place as the elderly residents have to relocate. The author proposes to utilise the open car park space to allow the formation of a close-knit community involving the elderly and encourage ageing in place.

**Neo, Y. T. (2007).** *Smart homes in relation to the demand and needs of the elderly.* Department of Real Estate, School of Design and Environment, National University of Singapore.

This thesis surveys the needs of the elderly with regards to Smart Homes and their receptiveness to stay in such homes. The study found that the key factors influencing the decision of the elderly include comfort, medical, facilities available, convenience, emergency and security.

**Nur Zakiiyah Binte Saini. (2007).** *Housing options for the elderly.* Department of Real Estate, School of Design and Environment, National University of Singapore.

This thesis examines the elderly's preference and choice of housing options for their retirement. The study shows that the factors of savings, current residential property owned and relationship with children influence decisions. The study also reviews private property owners, whether they might consider buying HDB flats in their retirement. It proposes that modifications be done to the flats to cater to the physical needs of the elderly and to consider provision of medical services in the public housing precincts.

**Hardiyanto, H. (2008).** *Public housing for the elderly in Singapore.* Department of Real Estate, School of Design and Environment, National University of Singapore.

This thesis analyzes the impacts of aging population in Singapore and how these affect the elderly's public housing options by 2030, taking into consideration their income power and preference for housing types. With the increase in income among retirees, there is greater demand to implement policies and programmes that are sensitive to the needs of these older residents.

**Sng, E. H. (2009).** *Evaluation study on the Singapore's existing senior housing policies.* Department of Real Estate, School of Design and Environment, National University of Singapore.

This thesis reviews the effectiveness of the Singapore Government's senior housing policies as well as the design of housing for the elderly. It shows that there is a lack of understanding on the financial options available for the elderly to finance their own flats and more can be done to the design of the living quarters of the elderly, to make them more elder-friendly.

**Chik, C. C. D. (2010).** *Transforming public housing space for the ageing community.* Department of Architecture, School of Design and Environment, National University of Singapore.

This thesis assesses the planning of spaces within Singapore's public housing estate for the anticipated increase of older population. The writer opined that current housing programmes to introduce age-friendly features or even *en bloc* schemes to renew the estate are inadequate in meeting the community life needs of the aging community. Probable solutions lay in delocalising the town centre, adding medical, educational and recreational facilities and creating facilities activity nodes for the elderly to encourage ageing in place.

**Tng, P. G. D. (2010).** *An evaluation of the HDB Lease Buyback Scheme: Can it help unlock cash for elderly public homeowners.* Department of Real Estate, School of Design and Environment, National University of Singapore.

This thesis examines whether the Lease Buyback housing policy has met the needs of the needy elderly. Four concerns and the rigid criteria pertaining to subletting and the option to sell are highlighted. It suggests that the Singapore Government re-examine and fine-tune current approaches and regulations, terms and conditions, to be more flexible.

**Neo, S. K. (2011).** *Exploring the housing needs of the elderly in Singapore.* Department of Real Estate, School of Design and Environment, National University of Singapore.

This thesis investigates the needs of an ageing population in Singapore through a qualitative study. It concludes that the current supply of housing options did not meet the expected housing needs and recommends improvements in government



housing policies, housing options and provision of facilities and amenities in housing estates.

**Tan, T. S. (2011).** *Integrated habitat: Community living with the elderly: Crossroad for the third age, integrating the third age.* Department of Architecture, School of Design and Environment, National University of Singapore.

This thesis proposes integrating the well educated elderly residents through a new design approach, the concept of insertion. This, Tan said, could be achieved by introducing a link bridge that runs through the various types of housing in the neighbourhood and common facilities with communal deck spaces for the elderly to mingle. Another design element is to introduce a new and alternative living environment of an integrated habitat, which would allow the elderly residents to interact and participate in community or family activities in a familiar environment setting.

**Koh, M. C. C. (2012).** *Home away from home : A new model of care home for elderly with dementia.* Department of Real Estate, School of Design and Environment, National University of Singapore.

This thesis identifies the needs of elderly with dementia and proposes a holistic solution within a Care Home for the care of such people in the community, encouraging integration and rehabilitation of the elders and the community.

**Syamilah, B. (2012).** *Evaluation of existing public housing conditions and policies for elderly in Singapore.* Department of Real Estate, School of Design and Environment, National University of Singapore.

This thesis reviews the policies that are in place for the elderly since the introduction of the Studio Apartment scheme to the Lease Buy Back Scheme (in 2009) and gives insights to their effectiveness in improving the housing conditions of the elderly. The writer proposes four other schemes to improve the housing conditions of the older population: shared ownership, elderly rental scheme, deferred payment, loan and free shuttle service to bring older persons to the amenities.

**Goh, J. (2013).** *Elderly housing options and quality of life of elderly Singaporeans.* Department of Real Estate, School of Design and Environment, National University of Singapore.

This is a comparative analysis that assesses the impact of age-integrated and age-segregated housing. It found that residents in age-segregated housing experienced a lower quality of life than those in age-integrated housing as they felt marginalised. Proposed solutions include incorporating independent Studio Apartment as part of the housing mix.

**Goh, S. T. (2013).** *Potential for a retirement village in Singapore.* Department of Real Estate, National University of Singapore.

This thesis explores the feasibility of a retirement village as a housing option for ageing citizens. A survey was conducted on newly aged citizens (defined as those from 50 to 65 years old). It looked at various factors affecting the willingness of the elderly to live in a retirement village. The results show that the notion is more acceptable among the more educated, high-income or single respondents. However, the actualisation may fall short due to a lack of supply by developers.

**Low, X. Y. J. (2013).** *Why does the perception of the Silver Housing Bonus Scheme differ amongst the elderly?* Department of Real Estate, School of Design and Environment, National University of Singapore.

This thesis investigates the causes of the low take-up rate of the Silver Housing Bonus Scheme among the elderly. The result shows that the desire to bequest their house to their children (bequest motive), housing type and location are factors behind the low take-up.

**Tan, K. P. (2013).** *Retirement Village: A viable housing option for the elderly?* Department of Real Estate, School of Design and Environment, National University of Singapore.

This thesis reports on a survey of 404 respondents (aged 50 and older) for their views on the option of a retirement village. The result reveals that many respondents are not in favour of the option due to a lack of understanding (“low awareness and poor understanding”) of the concept of a retirement village. The preference is to stay with their nuclear family and age in place, with the necessary home modifications done to their existing homes. However, when the survey results are extrapolated, they reveal that there is actually enough demand.

**Lee, L. F. (2014).** *Collaborative housing as an alternative lifestyle in Singapore, kick-starting with middle income new retirees.* Department of Real Estate, School of Design and Environment, National University of Singapore.

This thesis proposes a new type of collaborative housing community project, which would allow the newly retired to age in place as an alternative housing option. Differing from the existing housing options for the elderly, it would be a private endeavour that is ground-up, targeting the middle-income retirees who are down-sizing (or right-sizing) after their retirement.

**Loh, Z. P. (2014).** *A place to grow old: A study on public housing in Singapore and its senior residents.* Department of Architecture, School of Design and Environment, National University of Singapore.

This thesis evaluates three generations of public housing on whether they meet the needs of the ageing residents. The study concludes that the Housing and Development Board estates are not built specifically for the elderly and the older estates need much retrofitting in order to provide the amenities needed. It suggests

that in planning for future estates, the planner should consider the changing profile of the residents over time to ensure elder-friendly and barrier-free designs are incorporated during the design phase.

**Seah, H. L. (2014).** *Integrative public spaces for the elderly: Healthy environments in relation to the sense of coherence - Exploration and evaluation in Marine Parade Estate.* Department of Architecture, School of Design and Environment, National University of Singapore.

This thesis evaluates the current condition of existing public spaces and their impact on the elderly based on the Salutogenic model. The study uses post-occupancy evaluation, looking at comprehensibility, manageability and meaningfulness. Results of the study show that the public space does well in comprehensibility and manageability but lacks meaningful stimulation to the elderly.

**Wong, H. J. A. (2014).** *Ageing-in-place for public housing environment in Singapore: A study on the barrier-free accessibility for the elderly in Bukit Merah View and Henderson Heights.* Department of Architecture, School of Design and Environment, National University of Singapore.

This thesis evaluates public housing options, whether they sufficiently meet the need of ageing in place and psychological support for the elderly. The study focuses on the priorities for accessibility for essential services and facilities, and the barriers to convenience at public spaces. It concludes with suggestions on how the designs can be improved to incorporate barrier-free design concept to improve the well-being of the elderly.

**Yong, W. K. (2015).** *Active aging: Housing integrating community bonding and farming.* Department of Architecture, School of Design and Environment, National University of Singapore.

This thesis has proposed introducing farming activities into the housing estate as a means to encourage active ageing among senior citizens. Through such activities, the elderly could develop a sense of identity, connect to a social network, engage in physical activities and maintain mental health. They could also sell the produce as a source of financial support. Site design and linkages are proposed to allow the integration of studio apartments and housing blocks to enable the elderly to age in place.

**Oh, Y. C. (2015).** *Introducing cohousing: Singaporeans' attitudes towards a new housing arrangement.* Department of Real Estate, School of Design and Environment, National University of Singapore.

This thesis introduces co-housing, a new housing option and living arrangement for elderly citizens. This housing option encourages the elderly to take responsibility in their social life while maintaining a support and collaborative network. Residents in the community would provide mutual support to one another and this active social experience is promising to achieve slower ageing and higher quality of life. Some 385 Singaporeans, aged 26–55, were surveyed and the results indicate favourable sentiments to introduce co-housing into Singapore.

### 2.2.3 News Reports

This section provides updates by the local media on a range of topics related to housing for the elderly and ageing population including measures taken to cater to the needs of these groups.

**The Straits Times. (1975, July 2). Good idea to house the aged in HDB flats. *The Straits Times, Singapore.***

Various groups of people including welfare organisations, representatives of homes for the aged and public housing residents supported the suggestion by then Minister for National Development, Mr. Lim Kim San, to plan for suitable housing for old folks in housing estates to allow them to continue to live independently but near their loved ones.

**The Straits Times. (1980, February 11). More homes needed for rising number of aged. *The Straits Times, Singapore.***

Minister for Labour, Mr. Ong Pang Boon called for more homes for the ageing population in the next 10 years, to meet the demand from urban renewal and those older folks who have no children of their own to look after them.

**The Straits Times. (1984, December 8). Housing the “live alone” aged in the 1990s. HDB may build studio apartments. *The Straits Times, Singapore.***

Minister for National Development, Mr. Teh Cheang-Wan stated that the Government would consider building studio apartments for the elderly in future.

**The Straits Times. (1986, August 26). Study on studio flats for the aged. *The Straits Times, Singapore.***

Minister for National Development, Mr. Teh Cheang-Wan announced that the Government was studying the possibility of building studio apartments together with larger four- and five-room flats.

**The Straits Times. (1990, November 21). Plan for smaller flats on lower floors for the aged. *The Straits Times, Singapore.***

The Government announced plan to provide smaller flats on lower floors for the aged. This would enable them to keep close to their adult offspring living in the same HDB block.

**The Straits Times. (1993, October 5). 6,500 HDB residents aged above 50 years live by themselves in their flats. *The Straits Times, Singapore.***

The Housing and Development Board (HDB) revealed that there are about 6500 public housing residents aged 50 and older who live alone. Besides community based care and support services, the HDB plans to refurbish one-room apartment for the elderly.

**The Straits Times. (1994, March 22). New-style shelters planned for the aged. *The Straits Times, Singapore.***

Acting Minister for Community Development, Mr. Abdullah Tarmugi announced that the Government is collaborating with welfare organisations to establish a new style housing for elderly destitute for free.

**The Straits Times. (1994, April 21). One-stop life-style centre and retirement villages being looked into. *The Straits Times, Singapore.***

Mr. Lim Boom Heng, National Trade Union Congress (NTUC) Secretary General, shared that the NTUC is considering developing retirement village for the elderly. Such villages, he said, would be located near Housing and Development Board estates.

**The Straits Times. (1994, May 30). New co-op for retirement villages idea. *The Straits Times, Singapore.***

The National Trade Union Congress announced that a new cooperative would be established within a year to build retirement village. A typical development will be about 100–200 apartments, equipped with support services.

**The Straits Times. (1994, December 21). Scheme for elderly takes in six more one-room blocks. *The Business Times, Singapore.***

The Ministry of National Development announced that it would include six more blocks of one-room apartments to the Government's apartment improvement programme for the elderly. The Housing and Development Board will provide support hand bars in toilets and corridors.

**The Straits Times. (1996, June 29). Five more blocks of one-room rental flats to be refurbished for elderly residents. *The Straits Times, Singapore.***

Mr. Lim Hng-Kiang, Minister for National Development, announced that the Government would extend the Government's apartment improvement programme for the elderly to five more blocks of one-room apartments.

**The Straits Times. (1996, November 4). Reverse mortgage a way out for elderly. *The Straits Times, Singapore.***

The Cost Review Committee recommended that the Government implement measures to facilitate reverse mortgages. The intention of reverse mortgages was to make elderly financially more independent.

**The Straits Times. (1996, November 30). How elderly gain income without losing home. *The Straits Times, Singapore.***

The National Trade Union Congress announced plans to launch a reverse mortgage scheme in January 1997. Under such a scheme, the elderly aged 60 and older who own private property will be able to use their property as collateral in return for monthly payments.

**The Straits Times. (1997, January 29). Located near children's homes in new towns. *The Straits Times, Singapore.***

Minister for National Development, Mr. Lim Hng-Kiang, stated that the Government was studying how studio apartments could be incorporated into public housing programme in new towns.

**The Straits Times. (1997, February 27). Hong How plans to build retirement village. *The Straits Times, Singapore.***

Hong How Corporation and a Chinese clan association proposed to build an apartment project for the elderly based on the retirement village concept.

**The Straits Times. (1997, August 12). NTUC studying idea of retirement villages for middle, higher-income. *The Straits Times, Singapore.***

The National Trade Union Congress (NTUC) announced that it was considering building retirement villages for middle and higher income senior citizens. The retirement village is likely to comprise studio apartments of about 300 square feet in size.

**The Straits Times. (1997, September 2). More flats to be made elderly friendly. HDB to spend \$43m to retrofit six blocks of one-room flats. *The Straits Times, Singapore.***

The Parliament Secretary of National Development announced that the Housing and Development Board would spend S\$43 million to retrofit six blocks of one-room apartments as part of its on-going project to make them elder-friendly.

**The Straits Times. (1997, September 27). Two in five worry about housing in old age. *The Straits Times, Singapore.***

A survey conducted by the Singapore Press Holdings Research and Information Department revealed that two in five Singaporeans worry about housing needs in their old age, especially the lower income group.

**The Straits Times. (1997, November 6). The HDB to sell studio flats for the elderly. 580 aged-friendly units to be built at four sites. *Straits Times, Singapore.***

Minister for National Development, Mr. Lim Hng-Kiang, announced that the Housing and Development Board would build affordable studio apartments for the elderly; 580 apartments located at four sites would be available for Singaporean aged 55 years and above.

**The Straits Times. (1998, March 26). HDB to build 650 studio flats for elderly in pilot project. *The Straits Times, Singapore.***

Minister for National Development, Mr. Lim Hng-Kiang, announced that the Housing and Development Board would build 650 studio apartments in a pilot

project. The concept differed from previous schemes such as multi-tier family scheme that encouraged the elderly to live with their families.

**The Straits Times. (1998, March 26). New flats for the aged unveiled. *The Straits Times, Singapore.***

The Housing and Development Board unveiled its new studio apartments for the elderly. The flats are equipped with elder-friendly features such as “non-slip flooring, lever taps and large electrical switches”.

**The Straits Times. Flats for old: 160 applied. (1998, April 9). *The Straits Times, Singapore.***

Parliament Secretary (National Development), Mr. Koo Tsai-Kee, announced that the Housing and Development Board new studio apartments for the elderly are selling well; 160 applications have been received within two weeks since its launch.

**The Straits Times. (1998, June 7). Government to build more studio apartments. *The Straits Times, Singapore.***

Minister for National Development, Mr. Lim Hng-Kiang noted that the pilot studio apartments have been well received and the Government plans to build more studio apartments with improved measures.

**The Straits Times. (1998, October 5). Another batch of elderly-friendly flats picked. *The Straits Times, Singapore.***

Parliament Secretary (National Development), Mr. Koo Tsai-Kee announced that six blocks of Housing and Development Board one-room apartments would be refurbished with elder-friendly features.

**The Straits Times. (1999, February 26). Flats for elderly may be cheaper. *The Straits Times, Singapore.***

The Housing and Development Board announced that prices of its studio apartments for the elderly are likely to be cheaper. However, no details are provided.

**The Straits Times. (1999, March 12). Prices for studio flats for elderly slashed by 25 %. *The Straits Times, Singapore.***

The Housing and Development Board announced that prices of its studio apartments for the elderly are reduced by 25 %, translating to savings of between S \$16,800 and S\$20,000 per unit.

**The Straits Times. (1999, May 2). Next: studio apartments for elderly. *The Straits Times, Singapore.***

National Trade Union Congress (NTUC) Chief, Mr. Lim Boon Heng, revealed that the NTUC is considering building studio apartments for the elderly.

**The Straits Times. (1999, May 18). Call to set aside land for elderly. *The Straits Times, Singapore.***

President of Real Estate Developers' Association of Singapore, Mr. Daniel Teo proposed that the Singapore Government reserve some 99-years leasehold land for private housing for the elderly when it resumes its land sales in 2000.

**Tan, C. (2000, February 10). Retirement village in Loyang. *The Straits Times, Singapore.***

An investor group, Group Associates, has bought a 43,648 square feet piece of land at Jalan Loyang Besar to build a low-rise retirement village for senior citizens. The project is said to model after retirement villages in the United States and Australia.

**The Straits Times. (2000, February 10). European buyers plan retirement village for Loyang Lodge site. *The Straits Times, Singapore.***

A 946-year lease for a plot of land at Loyang has been bought by European investors specialising in retirement villages. The plot of land, measuring 43,648 square feet, is sold at S\$15 million.

**Tan, C. (2000, March 24). NTUC unit to launch its private condo. *The Straits Times, Singapore.***

NTUC Choice Homes has bought land in Simei to develop housing units for different households. They are exploring building studio apartments for the elderly, adopting a cradle-to-grave strategy.

**Leong, P. (2000, June 4). More senior citizens living in HDB flats. *The Straits Times, Singapore.***

Between 1993 and 1998, the percentage of residents aged 65 and older has increased from 5.7 to 7.2 %. Facilities liked by the elderly residents include the convenience of nearby shops, market, hawker centres as well as covered linkways. They would like to have more pedestrian crossings, bus stops and bicycle stands as well as lift in multi-storey carparks as they find it difficult to cross overhead bridges or use stairs.

**The Straits Times. (2000, September 1). Scheme for elderly to let flats welcomed. *The Straits Times, Singapore.***

The Housing and Development Board has given approval to allow elderly flat owners to rent out their entire unit on a case-by-case basis. The objective is to allow them to generate income for their retirement and to encourage them to stay with their children or other relatives.

**Arshad, A. (2001, February 19). More comfortable flats for the elderly in the offing. *The Straits Times, Singapore.***

The Housing and Development Board has upgraded three blocks of rental flats at Bendemeer Road, with handle-bars and lifts that stop on every floor to benefit the



elderly residents there. The work that took place between May and November 2005 is estimated at S\$24.5 million for 304 flats.

**The Straits Times (Commentary Analysis). (2001, May 7). Golden years abroad. *The Straits Times, Singapore.***

NTUC Income announced plans to introduce a programme for active retirees to collect rent on the lease of their HDB flats or private property while they stayed abroad. The company would also assist the retirees to source for appropriate housing overseas according to their financial means.

**Chew, M. (2001, May 28). More elderly can apply for HDB studio flats. *The Business Times, Singapore.***

Due to poor take-up of studio apartments for the elderly launched three years ago, the Housing and Development Board has decided to relax its criteria to allow more elderly to apply for such flats. They could be non-HDB flat owner including those who do not own homes or who owned private houses or apartments but wish to sell.

**Teo, L. & Yap, S. (2001, June 1). Why some elderly are not keen to live in granny flats. *The Straits Times, Singapore.***

Despite the lowered criteria for the elderly to apply for HDB's studio apartments, many are not keen to apply, as there is low investment value.

**Teo, L. (2001, June 8). Elderly prefer to live with families. *The Straits Times, Singapore.***

Even though the Housing and Development Board has relaxed its rules to encourage elderly people to apply for studio apartments (granny flats), not many opt to apply, as they prefer to live with families.

**Heng, L. S. (2001, June 15). Letter - Lease for granny flats can be extended. *The Straits Times, Singapore.***

A writer to *The Straits Times* suggested extending the 30-year lease period of the Studio Apartment by another 10 years to meet the housing needs of the elderly as life expectancy tend to be longer.

**Tan, A. (2002, May 14). Weak take-up so far for reverse mortgages. *The Business Times, Singapore.***

The article reported that the response to the 5-year old reverse mortgages scheme is low. It is not likely that HDB flats would be added to the scheme.

**Rashiwla, K. (2002, May 21). REDAS urges HDB to provide reverse mortgages. *The Business Times, Singapore.***

The Real Estate Developers Association of Singapore (REDAS) proposed that the Housing and Development Board (HDB) offer reverse mortgages for public flats

owners to help those who have cash flow problems. This move would effectively make the HDB take on the role of financier.

**Lee, J. (2002, October 15). Care givers can get tips from one-stop centre. *The Straits Times, Singapore.***

Caregivers for the elderly and disabled can now get advice on how to manage their tasks at a one-stop centre in Toa Payoh Lorong 1. The new Resource Centre is established with about S\$500,000 in donations. The National Council of Social Service (NCSS) has funded its daily operation cost.

**Yin, L. P. (2003, January 14). New studio flats let old and young mix. *The Straits Times, Singapore.***

The Housing and Development Board (HDB) has adopted a new approach in providing public housing for the elderly. To allow the seniors to live alongside younger families in the same block, the HDB would incorporate studio apartments in the same three-, four- and five-room units block. This is a change from building studio apartments as separate blocks.

**Yi, Q. Z. (2003, September 10). More time for crossing. *The Straits Times, Singapore.***

To cater for the decreased physical ability of the elderly, traffic light timing at two- or even three-lane roads in housing estates would have longer time to allow this group of road users to cross the roads safely.

**The Straits Times. (2004, February 28). Integrated studio flats for elderly. *The Straits Times, Singapore.***

The response to integrated studio flats introduced in 2003 has been encouraging with the take-up rate as high as 96 % in some blocks. The Housing and Development Board announced that it would continue to build more studio apartments that would be integrated with other home types in the same block.

**Tan, A. (2004, June 16). Reverse mortgages seen as unappealing to HDB lessees. *The Business Times, Singapore.***

Minister for National Development, Mr. Mah Bow Tan said in Parliament yesterday that while the Government has looked at offering reverse mortgages as a means to help elderly HDB lessees with an additional source of income for their retirement needs, participation rate is low as the packages offered are not appealing.

**Tan, T. (2005, June 21). More elderly people want to live alone. *The Straits Times, Singapore.***

A growing number of the elderly in Singapore who preferred peace and quiet in their twilight years, would rather live alone than face the conflicts, which can come from living with their children.

**Koh, L., & Ong, H. H. (2005, August 29). More elderly friendly flats are on the way. *The Straits Times, Singapore.***

The Housing and Development Board has adjusted some of its housing policies to enable the elderly in Singapore to meet their housing needs in their retirement. This include extending the household income ceiling to encourage the elderly to stay with their children, relaxing the conditions for purchase of Studio Apartments and upgrading rental-flats with more elder-friendly features.

**Chuang, P. M. (2006, February 9). Shorten leases for retirement homes. *The Business Times, Singapore.***

The Committee on Ageing has recommended shortening land leases to lower land cost and suggested that the Housing and Development Board (HDB) partner with the private sector to offer reverse mortgages for elderly HDB flat lessees.

**Liew, H. (2006, February 9). Hit gold if you house the old. *The New Paper, Singapore.***

With the elderly in Singapore's population growing, there are business opportunities for companies targeting this age group. One such area is housing options for the senior citizens. The Committee on Ageing Issues has proposed retirement villages (locally and overseas) as well as retirement flats or condominium estates with healthcare facilities and social services needed by the elderly as desirable housing options.

**Tan, H. Y. (2007, January 13). A home of our own. *The Straits Times, Singapore.***

Over the years, the housing authority has relaxed the regulations for singles to own a HDB flat. Nevertheless, the expenses incurred still outweigh that of staying with one's parents and many still chose to live with them. Dr. Lum Sau Kim, Assistant Professor at the National University of Singapore, Department of Real Estate, pointed out that this would deter the efforts of the authorities to enhance the elderly financial situation to either rent out a room or downgrade to a smaller home.

**Lin, K. (2007, February 26). More elderly folks prefer to live alone. *The Straits Times, Singapore.***

According to feedback from Members of Parliament, it is revealed that the elderly preferred to live on their own for three reasons, namely, to avoid constant spats with their children, not wanting to live in overcrowded households and the desire for an independent lifestyle.

**Tan, H. Y. (2007, September 1). Cutting-edge HDB designs on display; Ideas include "granny flats", pick-your-own unit facades and "sky villages. *The Straits Times, Singapore.***

Extended families residing in separate but uniquely designed flats while other home buyers could pick the ambience they would like for their flat are some of the latest trends in public housing that have been implemented all over Singapore.

**Cheam, J. (2008, February 29). HDB unveils “income for life” scheme for the elderly; It will buy back tail-end of flat lease at market rate, with money going to CPF Life. *The Straits Times, Singapore.***

The Housing and Development Board unveiled a scheme to buy back the “tail-end of a flat lease at market valuation, leaving a 30-year lease for the household”. It would pay market rate for the lease purchased and this money would be credited to the new Central Provident Fund Life annuity in the flat owner’s name.

**Mathi, B. (2008, August 5). Forging Singapore’s own approach on ageing issues. *The Straits Times, Singapore.***

Mr. Lim Boon Heng, Minister in the Prime Minister’s Office and Chairman of the Ministerial Committee on Ageing shared his insights on Singapore’s approach to the ageing issues. He taps into ideas gleaned from his visits to nursing homes, hospitals and retirement villages in Japan, South Korea, Britain, Australia, Finland and elsewhere. He concludes that for the four areas the Ministerial Committee on Ageing has prioritised: finances of the elderly and their employability; ageing in place (issue of accessibility); active ageing and health, Singapore had to devise its own approach to tackle the issues.

**Lee, H. C. (2008, November 13). Programme ensures elderly voices are heard. *The Straits Times, Singapore.***

Tsao Foundation, a non-profit family foundation with focus on promoting successful and active ageing, started a programme: The Voices of Older People, to collate views and feedback from people (age 50 and older) on jobs and housing options. The collated feedback would be submitted to the relevant ministries for consideration.

**Cheam, J. (2009, February 7). Lease buy-back for elderly from March; Eligible home owners urged to seriously consider the scheme. *The Straits Times, Singapore.***

Starting from March 1 2009, the elderly could apply to the Housing and Development Board to monetise the value of their homes while still residing in the apartments. Information about the Lease buy-back scheme is given by the Minister for National Development, Mr. Mah Bow Tan in Parliament on 6 February 2009.

**Tay, S. C. (2009, July 4). Condo-style granny units; Frasers Centrepoint’s two-room units with adjoining studios prove a big hit with buyers. *The Straits Times, Singapore.***

Property developer, Frasers Centrepoint Homes initiated the ‘dual key’ apartments at two projects, Caspian at Lakeside and 8@Woodleigh. Different from the usual two-, three- or four- bedroom layout options, they are geared towards extended families buying new condominiums.

**Chang, R. (2010, January 13). Integrating the elderly in HDB living. *The Straits Times, Singapore.***

The Housing and Development Board would be making more housing options available to integrate the elderly through studio apartments and paired-unit flats, which allow them to live next door in a separate unit to their children or grandchildren. Design of the estates would incorporate barrier-free features and community spaces for the different generations to interact.

**Cai, H. (2010, March 5). Retirement housing land lease to be studied. *The Straits Times, Singapore.***

Property market players are in favour of the Government granting longer land leases for the development of retirement villages. This would help to get the advantages of economies of scale and offset higher building costs.

**Basu, R. (2010, April 16). Growing old together, *The Straits Times, Singapore.***

The writer argued that seniors-only housing did not necessarily undermine family values. He pointed out that retirement villages in Australia and the United States house up to three generations of older folks, and their families often visited them.

**Basu, R. (2010, April 28). No dorms of doom for elderly, please - Think beyond a single housing solution. *The Straits Times, Singapore.***

The writer put forth the notion that isolated retirement villages need not be the only housing solution for the elderly. He postulated that it would be more meaningful for the elderly to age in place in the neighbourhoods they had lived in for years.

**Cheam, J. (2011, October 16). Housing income ceiling raised for singles and elderly as well - Record 8,000 flats next month to meet demand. *The Straits Times, Singapore.***

The Housing and Development Board (HDB) made announcements related to raising the income ceiling for homebuyers ranging from families to singles and the elderly. The income ceiling for Central Provident Fund housing grant for singles as well as the household income ceiling for a new studio apartment for buyers aged above 55 have been lifted. The HDB would be releasing a record 8000 flats on the market and was planning to offer 50,000 new units in 2011 and 2012. It is hoped that these revisions will help ease the demand in the resale market.

**Cao, H. (2011, October 18). Allow shorter HDB lease buyback : Hri Kumar Nair. *The Straits Times, Singapore.***

The Lease Buy-back Scheme of the Housing and Development Board (HDB) allows elderly flat owners of three-room or smaller flats to own a 30-year lease on their flats and give the rest to the HDB. In return, they would get S\$5000 and monthly annuity payments for life. However, with the rising cost of living, MP Hri Kumar Nair proposed that the HDB allow these owners “to sell five-year or

10-year portions of their HDB leases back to the HDB” to meet their financial needs in other areas.

**Chang, R. (2011, October 18). MPs push for change in Government-citizen ties - Call for policy shifts in health care, housing and education. *The Straits Times, Singapore.***

Members of Parliament expressed their concerns and asked that the Government continue to engage the people for policies on housing, health care and transport.

**Chin, D. (2011, October 23). Emergency alarm for the elderly. *The Straits Times, Singapore.***

Under the Housing and Development Board facilities upgrading project for the elderly, the Alarm Alert System is installed in one-room rental flats at two separate locations, namely, the living room and bathroom. Once activated, it would notify nearby residents as well as staff working at a voluntary welfare organisations located on the ground floor of the apartment block.

**The Straits Times. (2011, November 4). Health Minister Gan on : Dealing with ageing population. *The Straits Times, Singapore.***

Health Minister, Mr. Gan Kim Yong highlighted in his speech certain key factors, which he believed are important in dealing with the ageing population. He shared his views on what pilot projects on housing the elderly should focus on, e.g. the advantages of maintaining a healthy lifestyle when nearing ageing and the roles of the Ministerial Committee on Ageing.

**Lee, U. (2012, February 18). \$20K bonus for older citizens who downgrade. *The Straits Times, Singapore.***

In his annual Budget Statement, Deputy Prime Minister and Finance Minister, Mr. Tharman Shanmugaratnam announced that the Government is introducing a Silver Housing Bonus to enable more older Singaporeans to monetise the cost of their HDB apartments. The scheme is targeted at those aged 55 and above who want to sell their existing flat and then move to a smaller unit.

**Lim, L. & Tay S. C. (2012, February 20). Elderly not ready to leave flats for Silver Housing Bonus; Familiarity with area, hassle of moving among their reasons to stay put. *The Straits Times, Singapore.***

The new Silver Housing Bonus gives the elderly an opportunity to utilise their housing asset savings. But, many stated that they are not yet willing to move to smaller flats. Based on a survey done on over 30 seniors in estates such as Queenstown, Toa Payoh, Serangoon and Tampines, only a minority stated that they would consider moving to a smaller apartment.

**Tai, J. & Lim, L. K. (2012, 12 April). Seniors living alone may rise to 83,000 by 2030. *The Straits Times, Singapore.***

With the growing number of elderly people living alone, it is needful to address issues concerning isolated seniors. The broadening of the scope of senior activity centres (SACs), as well as the adoption of technology such as wireless motion sensor systems in the flats of elderly, are some ways to reach out to such vulnerable seniors.

**Tan, M. (2012, December 27). Colliers on housing policy for the elderly, singles. *The Business Times, Singapore.***

A white paper by property consultancy, Colliers International suggested that there is room for more private sector involvement and policy tweaks in the housing provision needs for both the elderly and singles if the Government offered longer-tenured land for retirement villages.

**The Business Times (Editorial & Opinion). (2013, January 04). Look into housing for seniors and singles. *The Business Times, Singapore.***

The Ministry of National Development introduced enhancements to the Lease Buyback Scheme and Silver Housing Bonus to attract more elderly Singaporeans to take up the schemes.

**Tai, J. & Goy, P. (2012, 12 April). Group homes for the elderly: From two now to 60 by 2016. *The Straits Times, Singapore.***

The number of group homes for the elderly will be substantially increased in bid to support the elderly with little or no family support to age within the community instead of in nursing homes.

**Ong, C. (2013, December 11). 1st retirement housing project prices “on high side”. *The Straits Times, Singapore.***

Property agents have begun promoting units at Singapore’s first retirement housing development. But, experts say preliminary prices indicated that the units at this privately developed project are rather exorbitant.

**Channel News Asia. (2014). MND to study if reverse mortgages should be provided by private market or government. *Channel News Asia, Singapore.***

The Ministry of National Development (MND) is undertaking a study on whether in later years, reverse mortgages should be provided by the private market or by the Government. MND intends to refer to and involve industry partners, experts and the elderly as part of the study.

**Channel News Asia. (2014). URA to monitor outcome of first retirement village before deciding on future land sites. *Channel News Asia, Singapore.***

The Urban Redevelopment Authority (URA) said that it would check and revise the outcome of Singapore’s first retirement village prior to concluding if it would release more land for similar projects.

**Chiang, H. D. (2014, January 12). Ageing in comfort and with dignity. *The Straits Times, Singapore.***

Three seniors who worked with seniors painted a vision of their ideal retirement home. They include comfortable units with common lounge areas to facilitate two-way communication, together with health care and social activities. This article highlights the four basic needs of senior citizens, namely, health, housing, dignity and meaning.

**Basu, R. (2014, January 13). Lots of room for improvement at ‘retirement resort’. *The Straits Times, Singapore.***

Respondents’ opinions on what is marketed as Singapore first retirement resort indicates concerns on having a more stringent age criteria on the purchasers and reservations about the lack of regulations to ensure elderly-focused services and facilities that are marketed would be provided when the condominium is up and running.

**Ng, E. (2014, January 15). Consider dual-key apartments in BTO flats. *The New Paper, Singapore.***

Dual-key apartments are apartments with a main unit and an adjoining studio unit that have separate entrance, kitchen and bathroom. The studio units in such two-door apartments are meant to be occupied by elderly parents.

**Au-Yong, R. (2014, February 16). Budget 2014: Silver housing bonus for her greying years. *The Straits Times, Singapore.***

The Enhanced Silver Housing Scheme provides extra aid to lower-income elderly households who downsize from a larger flat and use the money earned from selling their larger flats to add to their retirement money.

**Chia, A. (2014, May 27). A new conversation that celebrates ageing. *TODAYonline.***

The Singapore Government embarks on a nation-wide consultation to gather information on initiatives to celebrate ageing. The plan covers seven aspects: “lifelong learning for seniors, employment, volunteerism, urban infrastructure, healthcare, retirement adequacy and research into ageing”.

**Boh, S. (2014, May 28). Congrats! You’ve lived a long life. *MyPaper, Singapore.***

Health Minister, Mr. Gan Kim Yong announced that his Ministry will put in place necessary provisions to change the perception of ageing from one of worrying to celebration. The Ministry would hold a series of public consultations involving voluntary welfare groups, businesses, unions and the academia to seek their inputs on the initiatives needed to promote successful ageing.



**AsiaOne. (2014, May 30). Masterplan for ageing soon. *AsiaOne, Singapore.***

The Singapore Government is developing a comprehensive plan for the elderly, covering areas such as “employment, volunteerism, urban infrastructure, health care, retirement adequacy and research into ageing”.

**Channel News Asia. (2014, May 30). S’pore can learn from Japan on managing ageing issue: PM Lee. *Channel News Asia.***

Prime Minister, Mr. Lee Hsien Loong noted that Singapore could learn much from Japan on how they managed the living arrangements for seniors in their country. He also added that that Japan may pick up pointers on how Singapore handled population issues such as immigration and foreign workers.

**Chia, A. (2014, May 30). President’s speech sets the right tone, say MPs. *TODAYonline.***

With the announcement of the Pioneer Generation Package, Speaker of Parliament, Halimah Yacob expresses her wish to see initiatives, which support the elderly to age in the community in the form of home-based care and assistance to the care-givers.

**Au-Yong, R. (2014, July 17). Parents may get carrot to join kids in newer towns, *AsiaOne Singapore News. The Straits Times, Singapore.***

Parents might receive incentives from the Government. This is aimed at encouraging them to move out of the old mature estates and join their children in newer ones. In addition, the Government would free up space in mature estates to allow multiple generations living together.

**Au-Yong, R. (2014, July 21). “Give \$40k subsidy” to get parents to join kids in newer towns: Analysts. *The Straits Times, Singapore.***

Analysts and residents are not hopeful of the success of National Development Minister, Mr. Khaw Boon Wan’s new bid to encourage family bonding and incentivise parents moving out of mature estates. A subsidy of S\$40,000 is expected to be the minimum amount that can motivate parents to leave their familiar surroundings in mature estates and move closer to their children in newer towns.

**Yeo, S. J. (2015, March 17). HDB elderly alert system well-received in test-bed. *The Straits Times, Singapore.* Retrieved from <http://www.straitstimes.com/singapore/housing/hdb-elderly-alert-system-well-received-in-test-bed>**

The Housing and Development Board tested the Smart Elderly Monitoring and Alert System (Semas) that keeps track of the elderly’s daily habits using motion sensors and notifies their caregivers when they are irregularities. Embedded with a portable panic button, the elderly can press when they require assistance from others. Following the initial test, with all households supported its use, the HDB is implementing them in two upcoming housing projects.

**Yeo, S. J. (2015, August 9). More HDB lease options for seniors soon. *The Straits Times, Singapore*. Retrieved from <http://www.straitstimes.com/singapore/housing/more-hdb-lease-options-for-seniors-soon>**

This article highlights the new Two-Room Flexi scheme for Housing and Development Board flats, combining two existing schemes: the studio apartment and the two-room flat schemes, which have various lease period and wide price differences.

**Ng, K. (2015, September 8). Elderly folks' wish for estate: Lifts, lifts, and more lifts. *TODAYonline*. Retrieved from <http://www.todayonline.com/ge2015/elderly-folks-wish-estate-lifts-lifts-and-more-lifts>**

One-third of those residing in the MacPherson constituency are over the age of 60. The over-60 demographic has raised requests for more age-friendly facilities such as building lifts and speed bumps on roads. To address their concerns, the Government is in the process of carrying out enhancements to make the area more suited to the needs of elderly people.

**Tai, J. (2015, November 8). First retirement village opens in Singapore in December. *The Straits Times*. Retrieved from <http://www.straitstimes.com/singapore/first-retirement-village-opens-in-singapore-in-december>**

St. Bernadette Lifestyle Village is Singapore's first-ever retirement community. It provides supervised housing and aims to assist the elderly in living as independently as possible.

**Petrovic, M. (2015, December 15). Take a look at the next generation of retirement housing. *Design Middle East*. Retrieved from <http://www.designmena.com/insight/take-a-look-at-the-next-generation-of-retirement-housing>**

A company called Spark has proposed a new retirement housing concept, known as Homefarm. Homefarm will allow seniors to live in a garden environment where they may also be employed. It incorporates vertical farming and rooftop soil planting to flexible housing that has been designed to cater to the needs and preferences of seniors.

**Yeo, S. (2015, December 24). Over 70,000 HDB households apply for elderly-friendly features at home. *The Straits Times*. Retrieved from <http://www.straitstimes.com/singapore/housing/over-70000-hdb-households-apply-for-elderly-friendly-features-at-home>**

The Enhancement for Active Seniors (Ease) scheme allows homeowners to renovate their flats with aged-friendly features such as grab bars, ramps and anti-slip treatment for tiles. The minimum age of application is also lowered from 70 to 65.

## 2.3 Asia (Except Singapore)

### 2.3.1 Hong Kong

**Chi, I., & Chow, N. (1997). Housing and family care for the elderly in Hong Kong. *Ageing International*, 23(3/4), 65–77.**

This article discusses the housing difficulties faced by the aged in Hong Kong, the relationship between housing and family care and the effects of housing policies on the elderly.

**Lo, E. (1998). *Housing and the Elderly in Hong Kong*. Department of Social Work and Social Administration, University of Hong Kong.**

The faculty of the Department of Social Work and Social Administration of the University of Hong Kong produced this book to report on the housing situations of the elderly in Hong Kong.

**Gabriel, C. (1999). Designing Housing for the Elderly in Hong Kong. *Hong Kong Housing Authority*.**

This paper describes the housing schemes drawn up for the elderly and singles in Hong Kong and the plans by the Hong Kong Housing Authority to satisfy the housing needs of the elderly.

**Chui, E. (2001). Doomed Elderly People in a Booming City: Urban Redevelopment and Housing Problems of Elderly People in Hong Kong. *Housing, Theory and Society*, 18(3-4), 158–166.**

This paper examines the problems that the elderly faced in the growing economy of Hong Kong, which had resulted in the urban renewal of older housing, making way for newer, more expensive ones. It argues that changes should be made to accommodate the older person's needs and has proposed housing policy directives.

**Phillips, D. R., Siu, O., Yeh, A. G. O., & Cheng, K. H. C. (2005). The impacts of dwelling conditions on older persons' psychological well-being in Hong Kong: the mediating role of residential satisfaction. *Social Science & Medicine*, 60(12), 2785–97.**

This study investigates how being happy with one's living conditions affects the psychological wellbeing of the elderly in Hong Kong. The local environment is shown to be of high importance to the elderly who may suffer from restricted mobility.

**Chiu, R. L. H., & Ho, M. H. C. (2006). Estimation of elderly housing demand in an Asian city: Methodological issues and policy implications. *Habitat International*, 30(4), 965–980.**

This paper argues that in a society where the custom of elderly parents living with the children is disintegrating, it would not be scientifically possible to forecast

elderly housing needs for planning and policy purposes. Public rental housing is perceived as the most secure type of housing. This preference indicates that there are shortcomings in policies pertaining to the aged, particularly the lack of elderly housing choices and high costs of these homes.

**Luk, K. (2006). The mask of ageing - Doing cultural research for a “social problem”. *Cultural Studies Review*, 12(2), 129–149.**

This paper documents how older women at the Tai Hang Tung Estate are resistant to moving to a different housing estate and joined force to find alternative new homes to stay in. The writer applied qualitative methods through cultural analysis instead of the traditional sociological approach to this issue of housing and rent in Hong Kong.

**Chui, E. (2008). Ageing in place in Hong Kong—Challenges and opportunities in a capitalist Chinese city. *Ageing International*, 32(3), 167–182.**

This article examines the challenges faced by the private sector and public sector in achieving ageing in place for the growing ageing population in Hong Kong. Despite urban redevelopment affecting older people’s ability to remain in their original homes, the Government’s community care policy could help in attaining in situ relocation to avoid dislocating the older people physically and socially from their original community.

**Chau, P. H., Mak, B., Choy, S. Y., Chan, K. C., Cheung, S. H., & Woo, J. (2009). Raising health literacy and promoting empowerment to meet the challenges of aging in Hong Kong. *Educational Gerontology*, 36(1), 12–25.**

This study seeks to find out about the educational requirements of members of the public and related professional disciplines to enhance the public awareness of elderly issues pertaining to physical health. A survey was done to understand the knowledge gaps and misconceptions. The sample size involved 2694 subjects aged 16 and above.

**Lam, S. Y., Tech, T. A., Kong, H., & Yu, W. (2010). What is shaping the elderly housing finance reform effort in Hong Kong?. *The International Journal of Interdisciplinary Social Sciences*, 5(1).**

The rapid rise in home prices in Hong Kong has brought focus on housing and housing wealth, that it is vital to “enhancing the financial security for families and individuals” as they neared retirement. Policymakers face serious challenges in the light of “societal, economic and political issues related to the elderly people in Hong Kong”. The findings reveal the expectations of owning a property when individuals enter into their retirement age.

**Kwok, J. Y. C., & Tsang, K. K. M. (2012). Getting old with a good life: Research on the everyday life patterns of active older people. *Ageing International*, 37(3), 300–317.**

This article reviews the responses of 55 respondents to understand how active elderly people planned their everyday lives, how they maintain a quality lifestyle with assistance from the urban environment. The respondents commented on the city's extent of being elder-friendly. The findings show that older people who are in good health and possess sufficient resources strive for an active life.

**Chan, C. A., & Liang, J. E. (2012). Active aging: Policy framework and applications to promote older adult participation in Hong Kong. *Ageing International*, 38(1), 28–42.**

This paper traces how the Hong Kong Government together with its advisory body for ageing policy, the Elderly Commission, derived the active ageing framework, encompassing security, social and economic participation and health maintenance. It outlines three main active ageing schemes and annual themes for elderly projects from 1991 to 2012.

**Du, S., Sun, S., & Li, H. (2012). Study on the public rental housing design for the elderly generation in Hong Kong. *AMM*, 174-177, 1871-1875. <http://dx.doi.org/10.4028/www.scientific.net/amm.174-177.1871>**

To encourage ageing in place, innovative design initiatives are taken into account in low-rent housing design. The authors studied housing design for the aged in Hong Kong over the past 30 years.

**Tam, M. (2012). Elder learning in Hong Kong: Policies, programmes, provisions and issues. *Educational Gerontology*, 38(2), 107–113.**

This paper describes the situation in Hong Kong where the elderly are encouraged to keep active by learning actively. Since the 1980s, the Elderly Commission of Hong Kong has attempted to promote active ageing in a variety of ways. This has, over the decades, been significantly beneficial to the elderly.

**Hui, E. C. M., Wong, F. K. W., Chung, K. W., & Lau, K. Y. (2014). Housing affordability, preferences and expectations of elderly with government intervention. *Habitat International*, 43, 11–21.**

In this study, prospect theory is used to investigate elderly housing. A linear regression model is used to analyse factors that influenced whether the aged are happy with their living conditions. The results show that more wealthy respondents are highly satisfied with current housing as compared to those living in public housing. It concludes that the Government's housing policy should be formulated such that elderly people could age in place more comfortably in a familiar environment.

**Lee, K. M., To, B. H. & Yu, K. M. (2014). The new paradox of thrift. *China Perspectives*, 2014(1), 15-24.**

The paper analyses the income inequality caused by poverty among the aged. As family support as a means of retirement protection is phasing out over the years, the

Hong Kong Government has to evaluate alternative options on how to insure low-income households against old-age poverty.

**Sze, P., & Au-Yeung, K. (2015). The elderly resources centre. In J. van Hoof, G. Demiris & E. Wouters, *Handbook of Smart Homes, Health Care and Well-Being* (1st ed., pp. 1-12). Springer.**

The Elderly Resources Centre (ERC) has been set up by the Hong Kong Housing Society to promote ageing in place in Hong Kong. The three basic elements that are focused on to help older people to age in place are: suitable living environment, healthy ageing and safety living.

**Xu, A. (2015, May 27). Elderly set for life in rental flat first. *The Standard*. Retrieved from [http://www.thestandard.com.hk/news\\_detail.asp?pp\\_cat=1&art\\_id=157352&sid=44547887&con\\_type=1](http://www.thestandard.com.hk/news_detail.asp?pp_cat=1&art_id=157352&sid=44547887&con_type=1)**

This newspaper article highlights an on-going rental housing project developed by the Hong Kong Housing Society, which allows the elderly in Hong Kong to apply for. Constructed in Tanner Hill, it is expected to complete in early 2016. The elderly will be able to live in the flats on a long-term basis. The housing project includes elder-specific facilities, a rehabilitation centre and a day care centre.

### **2.3.2 Japan**

**Kose, S., & Nakaohji, M. (1991). Design guidelines for dwellings for an ageing society — A Japanese perspective. *Building Research & Information*, 19(1), 24–30.**

Based on findings in a report submitted to the Housing Construction Division of the Ministry of Construction, Japan, this paper provides an update on some design guidelines and requirements for an ageing society to better meet the needs of the elderly. The guidelines, targeted at assisting elderly when their physical and mental abilities decrease, allow for adjustable equipment and facilities in the house and for adaptation to be easy and economically feasible.

**Kose, S., & Nakaohji, M. (1991). Housing the aged – Past, present, and future – Policy Development by the Ministry of Construction of Japan, *Journal of Architectural and Planning Research*, 8(4), 296-306.**

This paper examines the policy initiatives to tackle Japan's ageing population and proposes potential solutions. The Ministry of Construction has played an important part to deliver policies designed to house the elderly such as supplying public housing for sale or for rent, financial assistance in housing loans, interest subsidy and so on.

**Zhao, L., Tatara, K., Kuroda, K., & Takayama, Y. (1993). Mortality of frail elderly people living at home in relation to housing conditions. *Journal of Epidemiology and Community Health*, 47(4), 298-302.**

This study aims to find out the relationship between the mortality of frail old people living at home and the condition of their houses. The results indicate that survival rates are higher in people living in good house conditions. The author proposes programmes to improve the housing conditions for disabled elderly.

**Kose, S. (1997). Housing elderly people in Japan. *Ageing International*, 23(3), 148-164.**

This article examines how useful different public policy initiatives are when trying to provide homes for the aged after World War II. It discusses recent incentives aimed at housing design. It emphasises the ways in which the general public are convinced to accept the ideas of dwellings designed for everybody, throughout life.

**Takahashi, T. (1997). Urban housing and the elderly. In *Handbook of Japan-United States Environment-Behavior Research: Toward a Transactional Approach* (pp. 43-50). New York, NY, US: Plenum Press.**

The article discusses the effort by the public sector in Japan to provide housing for the elderly such as silver housing. The designs of these houses are based on barrier-free concept, especially in building elements and facilities. The research group visited 4 housing sites and recorded the actual living conditions of the elderly so as to develop design guidelines for elderly housing in Japan.

**Nakagawa, M. (2003). Why is there discrimination against the elderly? Experimental and empirical analyses for the rental housing market in Japan. *Ageing International, ISER Discu* (578).**

This paper reports the findings of a new fair housing audit (2002 Osaka Audits), in which housing discrimination against elderly home-seekers is studied. The paper suggests that the risks pertaining to the elderly's future income changing, potential fire risk, having a lack of a permanent dwelling for an extended period of time and their preference for location of housing, affected housing discrimination against elderly home-seekers.

**Mitchell, O. S. (2004). Unlocking housing equity in Japan, *Journal of the Japanese and International Economies*, 18(4), 466-505.**

This study evaluates what might be needed to implement reverse mortgages (RMs) in Japan. Demand for RMs are projected to be low due to dropping residential housing prices together with low interest rates and long life expectancies.

**Ohara, K. (2004). Housing policy towards a super aging society: From building specifications to special needs measures. *Geriatrics & Gerontology International*, 4, S210-S213. [10.1111/j.1447-0594.2004.00203.x](https://doi.org/10.1111/j.1447-0594.2004.00203.x)**

This article discusses the housing policies in Japan to fit a ‘super aging society’. Guidelines of housing design devised to cope with aged society have been announced by the Ministry of Construction. This has led to housing adaptations to fit the needs for the elderly in collective housing, senior housing and nursing homes, etc.

**Migita, R., Yanagi, H., & Tomura, S. (2005). Factors affecting the mental health of residents in a communal-housing project for seniors in Japan. *Archives of Gerontology and Geriatrics*, 41(1), 1-14. doi:10.1016/j.archger.2004.10.007**

This research studies the mental health conditions (and the factors affecting them) of the elderly people who participated in a communal housing project, the Silver Peer Housing Project. Interviews were conducted to evaluate these residents’ mental health. The results suggest that it will be good to provide more comfort in design, psychogeriatric day treatment and a common shared space.

**Nishi, R. (2005). Research on aging and residential continuity of single elderly people in the Tokyo Metropolis: A case study of residents of the silver peer housing facilities in Bunkyo Ward, Tokyo, Japan. *Geographical Review of Japan*, 78(1), 48-63.**

The paper analyzes the housing policy of the Silver Peer Housing Project, a communal housing solution for the elderly. It examines two issues in detail: the disabilities associated with old age, and the limitations of the physical and social environment and its impact on the elderly.

**Kose, S. (2008). Housing for an ageing society: Adapting housing design toward universality is the minimum requirement for Inclusion. In Mann, W. C. (Ed.) *Aging, Disability and Independence: Selected Papers from 4th International Conference on Aging, Disability and Independence (pp. 19-39)*. Amsterdam, Netherlands: IOS Press.**

This article explains the “Design for All Ages” concept. In 1987, the Japanese Construction Ministry implemented a five-year research and development project on design for the ageing society. “Design for All Ages” is the main concept that moved away from the traditional concept of “special design for the aged”. It is drawn up based on the premise that residents would remain in their homes and that their homes could be adapted to meet their needs.

**Matsuda, S., & Fujino, Y. (2008). Healthy housing as an infrastructure of health support system. *Asian Pacific Journal of Disease Management*, 2(2), 55-61. doi:10.7223/apjdm.2.55**



A situation analysis of housing condition of the elderly is conducted in Fukuoka Prefecture, Japan. It found that old people living in houses that necessitate reconstruction are more willing to utilise institutional care services.

**Park, B. H., & Lee, H. O. (2008). A comparative study on housing welfare policies for the elderly between Korea and Japan – Focused on the elderly who can live independently. *Journal of Asian Public Policy*, 1(1), 90–103.**

This study compares housing situations for the elderly and housing welfare policy in Korea and Japan. The study focuses on those who could live independently. It suggests that there are more living independently in the Republic of Korea compared to those in Japan.

**Hirono, K. N. (2009). Housing policy for the elderly: A policy to build barrier-free rental housing. *Pacific Economic Review*, 14(5), 694-704. doi:10.1111/j.1468-0106.2009.00473.x**

This report emphasises barrier-free rental housing for the elderly population. The proposed scheme involves funding rental housing with a securities investor, property management and decreasing rent costs. The plan would require money to be raised to build barrier-free rental housing.

**Godzik, M. (2009). Choosing new places to live: Alternative housing solutions for the elderly in Japan. *Asia Pacific Network of Housing Research Conference, APNHR 2009 and 4th Australasian Housing Researchers Conference, AHRC 2009*, pp.1-14.**

While it is commonplace for elderly people to stay with their family for support, there are increasing numbers of old people staying alone or as a couple among those more than 65 years old. This paper shares alternative housing projects where a group of people live together in a communal form.

**Hirono, K. N. (2010). Housing policy for utilization of existing housing. *Pacific Economic Review*, 15(5), 697–707.**

This paper explores the issues, which decreased the purchasing rate of existing housing in Japan. Proposed plans to address these issues and to lure the current housing market are presented. The plans include using a hedonic price function where appropriate methods are decided for valuing existing housing, defects insurance for homes that people are selling, emphasising fixed-term housing leases and providing a transitional service between the elderly and subsequent home buyers.

**Kose, S. (2010). How can the exploding senior population be accommodated? Japanese struggle towards inclusive design. *Journal of Engineering Design*, 21(2-3), 165-171.**

This article describes how the elderly in Japan may get adaptive homes to facilitate their independence. Two surveys on the elderly in Japan were carried out and the

main finding is the pressing need to improve current housing design to make it more elder-friendly.

**Lee, S. (2010), A study on the housing support policy for the elderly in Japan, *Journal of the Korean Housing Association*, 21(4), pp. 41-50.**

This article examines the housing policy of Japan and how it has developed and improved the housing support services to cater to an ageing population.

**Godzik, M. (2011). New housing options for the elderly in Japan: The example of Tokyo's Edogawa Ward. *International Comparative Social Studies*, 25, 309-322.**

This book chapter shares new housing options for the Japanese elderly with a case study from Edogawa Ward on the outskirts of Tokyo.

**Pandelaki, E. E., Wijayanti, S. B., & Pribadi, S. B. (2014). The elderly friendly high-rise housing: A comparison study between Indonesia and Japan, *Procedia Environmental Sciences*, 20, 146-153.**

This paper proposes a conceptual model of high-rising housing to facilitate the daily life and activities of elderly, through a comparison study between Indonesia and Japan.

**Stewart, S. (2014). Redesigning domesticity: Creating homes for the elderly. *Architectural Design*, 84(2), 80-87. Doi:[10.1002/ad.1732](https://doi.org/10.1002/ad.1732)**

This article advocates the importance of a sense of home for old people to enjoy a high standard of life. The author shares case studies from UK, Japan and the Netherlands to illustrate the importance of architecture design in housing the elderly.

**Chang W. X. (2015). *Kawaba sanctuary: Experiential living for the Japanese elderly*. Department of Architecture, School of Design and Environment, National University of Singapore.**

This dissertation describes and introduces experiential living for the Japanese elderly. The core concept is to provide a network of sanctuaries located in the suburban area, designed to facilitate a community model of living among the elderly. Residents could explore the natural environments, engage local communities and their culture. It is hoped that these activities may better help the older people prepare themselves for peaceful ageing physically and mentally.

**Kayaba, M., Kondo, M., & Honda, Y. (2015). Characteristics of elderly people living in non-air-conditioned homes. *Environmental Health and Preventive Medicine*, 20(1), 68-71.**

The study aims to find out more about older adults in homes without air-conditioning. A study carried out in Misato City in July 2013 shows that most elderly individuals lived in air-conditioned homes. Elderly men who are single, living alone or living in an apartment are mostly living without air conditioning.

**Kumagai, F. (2015).** *Japanese Elders Living Apart: Policy Suggestions Family Issues on Marriage, Divorce, and Older Adults in Japan* (pp. 139-168): Springer Singapore.

The book studies various older population living alone. The first study is on aged people living alone in Yamagata prefecture. From there, the author offers three main conclusions. First, the aged should be allowed to live independently if they prefer to do so. Second, declining health conditions is normal in aging so the aged who live independently should attend health check-ups. Third, the elderly living alone should not be isolated from mutual support by others around them. In another study, the author found that there are more elderly persons living alone in Kagoshima prefecture compared to any other prefectures in Japan. Elders living alone in Kagoshima are, however, aided by those around them, unlike the aged living independently in Yamagata.

**Nakanishi, M., Shimizu, S., Murai, T., & Yamaoka, A., (2015).** “Ageing in Place” policy in Japan: Association between the development of an integrated community care system and the number of nursing home placements under the public long-term care insurance program among municipal governments. *Ageing International*, 40(3), 248-261. doi:10.1007/s12126-014-9215-x

The Integrated Community Care policy in Japan aims to help older people to age in place. This study explores the association between the Integrated Community Care system and the number of nursing homes. Through data analysis, the author concludes that the ageing in place policy should revise and improve the Integrated Community Care system for areas with limited resources.

**Yong, V., Minagawa, Y., & Saito, Y. (2015).** Policy and program measures for successful aging in Japan. In S. T. Cheng, I. Chi, H. H. Fung, L. W. Li & J. Woo (Eds.), *Successful Aging* (pp. 81-97): Springer Netherlands.

The book chapter traced the various policy and programme measures for successful ageing in Japan. For example, in 1985, the Ministry of Construction has implemented a Housing Plan for Senior Citizens, which requires every local government to have a long-term plan for the aged. Age-friendly homes have various features such as the removal of threshold steps, hand rails and bars. There are even arrangements for on-site care. In 1995, the Ministry of Construction has launched the Design Guidelines of Dwelling for an Ageing Society, which uses the concept of universal design, aimed at benefitting everyone.

### 2.3.3 Republic of Korea

**Manjae, K. (1997).** Housing policies for the elderly in Korea. *Ageing International*, 23(3-4), 78-89.

The percentage of aged persons has increased in the Republic of Korea while the Korean tradition of supporting elderly parent(s) is declining. Despite the general

consensus that older persons wish to live together with their children, some recent surveys have shown that there is a market for private nursing homes in Korea.

**Lee, E., & Gibler, K. M. (2004). Preferences for Korean seniors housing. *Journal of Property Investment & Finance*, 22(1), 112–135.**

The Republic of Korea is experiencing numerous changes that would lead to a greater need for seniors housing in the coming decades. Older people want housing that allows for privacy and independence from family members.

**Gibler, K. M. & Lee, E. (2005). The impact of economic, demographic, and cultural changes on preferences for independent living arrangements and seniors housing in South Korea. *Journal of Housing For the Elderly*, 19(2), 87-106.**

This article offers insight into how changes in preferences for elderly housing impact South Korean elderly people economically, demographically and culturally. It also describes the type of housing that South Korean elderly people currently live in.

**Kim, J., Kim, E., & Lee, Y. (2005). Elderly living arrangements and life satisfaction in Korea. *Paper presented at the annual meeting of the American Sociological Association, Marriott Hotel, Loews Philadelphia Hotel, Philadelphia.***

Using cross-sectional data from 2003 Social Statistic Survey conducted by National Statistical Office in the Republic of Korea (N = 8430 aged 65 and over), this paper examines whether the different living arrangements of the elderly matter for life satisfaction. The findings conclude a gender difference in the relationship between living arrangements and life satisfaction, and suggest that living arrangements can create different demands and resources for men and women.

**Park, B. H., & Lee, H. O. (2008). A comparative study on housing welfare policies for the elderly between Korea and Japan – Focused on the elderly who can live independently. *Journal of Asian Public Policy*, 1(1), 90–103.**

This study compares housing situations for the elderly and housing welfare policy in Korea and Japan. The study focuses on those who could live independently. It suggests that there are more elderly living independently in the Republic of Korea, compared to those in Japan.

**Kim S. H., Kim H.B., W. G. K. (2009). Impacts of senior citizens' lifestyle on their choices of elderly housing. *Journal of Consumer Marketing*, 20(3), 210–226.**

This study examines how the lifestyle of senior citizens correlates to the choices of retirement communities. The survey results reveal that most respondents prefer to be near Seoul and a pleasant surrounding environment with physical equipment and facilities. Medical services and community services are desired facilities in these retirement communities.

**Kim, S.K., Lee, Y.M., & Yim, M.S. (2009). High-tech amenities for the elderly: The technological assistance needs of elderly Koreans aging at home. *Journal of Housing for the Elderly*, 23(3), 204–226.**

The study surveys residential technological systems for the elderly from the literature. Elderly Koreans are then asked to evaluate these various technological systems including high-tech housing amenities. The findings show the elderly participants' willingness to adapt to technological systems without any fear of technology and their ranked priority on elderly safety needs.

**Age Friendly City, Seoul. (2011). *Survey Results of Age-friendliness of the City of Seoul*.**

This study is promoted by the Seoul Metropolitan Government Basic Ordinance on Senior Welfare to Realize an Age-Friendly City, which requires the conduct of a survey at least once every two years in order for the city to systematically cope with changes, largely due to rapid population aging.

**Ma, S. & Deng, Y. (2013). Evaluation of reverse mortgage programs in Korea. *Seoul Journal of Business*, 19(1), 137-160.**

The article analyses the government-insured reverse mortgage programme started by the Korean government in 2007. The usefulness of the Korean reverse mortgage model is evaluated. Alternative payment schemes that could work in tandem with social security systems are discussed. It suggests guidelines for future operation of the reverse mortgage system.

**Lim, J. (2014). The roles of relationship with family and life values in the housing choices of elderly Koreans. *Journal of Housing for the Elderly*, 28(2), 182–203.**

The writer examines the housing choices of Korean elderly where the wealth of the elderly is primarily locked away in housing equity. Family relationships and life values in housing choices are discussed. The findings reveal that though the trend towards nuclear families is growing, the elderly still want to be in proximity to their children. This greatly influences their housing decisions.

**Yeo, M., & Heshmati, A. (2014). Healthy residential environments for the elderly. *Journal of Housing for the Elderly*, 28(1), 1-20. doi:10.1080/02763893.2013.837421**

This study examines the relationship between residential environment and old people's health in South Korea. The author proposes ways to improve the facilities for the elderly including a safe, barrier-free environment to cater to their physical conditions and a continuous protection system that takes care of their sociopsychological health.

### 2.3.4 *China (Except Hong Kong)*

**Liu, Z. (1997). Planning for the elderly in the development and construction of new residential areas in Shanghai. *Cities*, 14(2), 77-84. [http://dx.doi.org/10.1016/s0264-2751\(96\)00045-5](http://dx.doi.org/10.1016/s0264-2751(96)00045-5)**

A survey was done in a new residential district of Shanghai. With respect to this survey, the article discusses the problems of the elderly, paying attention to 3 issues of concern. The first is choosing the types of dwelling units for new residential areas. The second is the ability to construct adapted housing to better meet the needs of the elderly. The third is how the residential environment of the new communities can be made more age-friendly.

**Ikels, C. (2004). The impact of housing policy on China's urban elderly. *Urban Anthropology and Studies of Cultural Systems and World Economic Development*, 33(2/4), 321-355.**

This article studies how changes in housing policy in China have affected the older population in urban areas. Greater support networks and more available paid care for the aged are some of the ways the older person has been impacted thus far.

**Ma, A., & Chow, N. (2005). The housing choices and preferences of older vacationers in Southern China. *Journal of Housing for the Elderly*, 19(1), 79-92. [http://dx.doi.org/10.1300/j081v19n01\\_06](http://dx.doi.org/10.1300/j081v19n01_06)**

This article focuses on the housing choices and preferences of older Chinese vacationers to the Pearl River Delta. The authors discover that choices in the location and design of housing have affected the housing preferences of these vacationers.

**Yan A. (2008). The aging of the population and housing reverse mortgages in China. *Canadian Social Science*, 4(4), 68-76.**

The aging population affects the socioeconomic and cultural development of China. Housing reverse mortgages enable the older person to monetise property values and increase pension to improve the quality of life in old age.

**Lam, S. (2011). Rejuvenating a supportive living environment for elderly: A new perspective for property investment. *International Journal of Interdisciplinary Social Sciences*, 5(11), 53-63.**

A survey was done on almost 200 older Chinese in 3 major cities. The author reports a change in the priorities that is shaping the patterns of future home ownership. The older population requires support services to help them in their daily lives. In developing an efficient method of service delivery, the long-term care system should intertwine health and housing.

**Li, B., & Chen, S. (2011a). A study of residential condition and satisfaction of the elderly in China. *Journal of Housing for the Elderly*, 25(1), 72–88.**

The article reviews and evaluates current elderly housing conditions in China. Major issues include affordability, inadequate community facilities, transportation, healthcare and housing environment. The elderly respondents as a whole are generally satisfied with their housing though there are different home ownerships and residential satisfaction.

**Li, B., & Chen, S. (2011b). Aging, living arrangements, and housing in China. *Ageing International*, 36(4), 463–474.**

Researching on existing living arrangements of the elderly in China, the authors found that housing and community facilities for the elderly are insufficient. In particular, grab bars, fitness facilities, handicapped facilities and senior activity centres are wanted by the elderly.

**Li, B. and Yang, Y. (2012). *Housing Stratification and Aging in Urban China*. Springer, 209-220.**

This book examines housing for the elderly in urban China. An important issue is ageing in place. This issue is linked to social stratification. With support from national statistics, the authors propose policies to improve housing provision, more vocational training for geriatric nurses, etc.

**Li, M., & Shen, K. (2013). Population aging and housing consumption: A nonlinear relationship in China. *China & World Economy*, 21(5), 60-77. <http://dx.doi.org/10.1111/j.1749-124x.2013.12039.x>**

This paper studies how demographic transition affects housing consumption and discovers that the elderly dependency ratio and housing consumption in China are related in a non-linear manner. The authors project that with more elderly in the community, housing consumption will increase. But, once a turning point is attained for the elderly dependency ratio, housing consumption will decrease. This turning point will be dependent on the relocation patterns of the older population.

**Liu, Z., & Chai, Y. (2013). Danwei, family ties, and residential mobility of urban Elderly in Beijing. In Besharov, D. & Baehler, K., *Chinese Social Policy in a Time of Transition* (pp. 196-222). New York: Oxford University Press.**

This book chapter focuses on research on housing choices of the older population in urban Beijing, in particular, on restrictions from danwei communities and traditional norms. Elderly mobility in China is more heavily influenced by the family than by any other things.

**Ye, M., & Chen, Y. (2013). The influence of domestic living arrangement and neighborhood identity on mental health among urban Chinese elders. *Aging & Mental Health*, 18(1), 40-50. <http://dx.doi.org/10.1080/13607863.2013.837142>**

This study involved over 900 older urban Chinese. It reports that their living arrangement is, in general, no longer a traditional co-residence pattern. Rather, it promotes independence and self-reliance. It further found that living with children has affected the older adults' mental health positively.

**Cao, M., Guo, X., Yu, H., Chen, L., & McDonald, T. (2014). Chinese community-dwelling elders' needs: Promoting ageing in place. *International Nursing Review*, 61(3), 327-335. <http://dx.doi.org/10.1111/inr.12119>**

The aim is to study the elderly's needs and ageing in place as this would be useful to promoting ageing in place. The authors surveyed some elderly people in Hangzhou over a 2-year period. The general finding is that older people desire to age in place since they are happy in their current communities.

**Liu, Y., Dijst, M., & Geertman, S. (2014). Residential segregation and well-being inequality between local and migrant elderly in Shanghai. *Habitat International*, 42, 175-185. <http://dx.doi.org/10.1016/j.habitatint.2013.12.005>**

This paper discusses how residential segregation affected the wellbeing of both local and migrant older population in Shanghai. The conclusion is that residential segregation between local and migrant elderly people in Shanghai has led to inequality in wellbeing.

**Liu, J., Tian, J., Yue, P., Wang, Y., Du, X., & Chen, S. (2015). Living experience and care needs of Chinese empty-nest elderly people in urban communities in Beijing, China: A qualitative study. *International Journal Of Nursing Sciences*, 2(1), 15-22. <http://dx.doi.org/10.1016/j.ijnss.2015.01.008>**

The authors carried out a survey on 25 empty-nester elderly in Beijing. They found that this group of people generally prefers home-based care over institutional care should they be unable to independently care for themselves.

**Zhou, S., Xie, M., & Kwan, M. (2015). Ageing in place and ageing with migration in the transitional context of urban China: A case study of ageing communities in Guangzhou. *Habitat International*, 49, 177-186. <http://dx.doi.org/10.1016/j.habitatint.2015.05.022>**

The authors identified 6 categories of ageing communities: traditional inner-city communities, traditional danwei residential communities, commercial housing ageing communities, danwei compound ageing communities, immigrant ageing communities, and rural ageing communities. They found that clustering of the elderly in each community forms differentiation patterns, the result of urban development and housing policies.



### 2.3.5 India

**Ara, S. (1997). Housing facilities for the elderly in India. *Ageing International*, 23(3-4), 107–114.**

This article provides an overview on ageing in India as well as the cultural practices in caring for the older person in India. It further explores existing housing facilities for the older population in urban India including city slums and old-age homes.

**Radkar, A., & Kaulagekar, A. (2006). Living conditions of elderly in India: An overview based on nationwide data. *Indian Journal of Gerontology*, 20(3), 250–263.**

This article gives an overview of the living conditions of senior citizens in India. It discovers that most older adults in both urban and rural locations own their homes. While the urban elderly enjoy a comfortable everyday life, the rural older population continues to be deprived of the basic needs such as water, electricity and sanitation.

**Ayers, J. (2014, July). Senior housing in India. *Multi-Housing News*, 49(7), 28–32. Retrieved from <http://digital.multi-housingnews.com/publication/?i=213672&p=28>**

As part of a senior living project, a housing project was built in Dehradun, India, incorporating a contemporary approach by considering the physiological and psychological needs of the elderly. The article provides insight on the challenges faced when designing and building the project as well as the unique features of this housing project.

**Vaidya, R., & Raje, A. (2014). Housing for the elderly: The changing scenario in India. *Architectural Design*, 84(2), 60–67.**

This article showcases different senior citizen housing projects around India, highlighting their unique features and facilities, and how some of these new housing solutions have addressed the needs of the elderly.

**Munshi, S. (2015). DDA planning 2,500 affordable service apartments for elderly. *The Times of India*. Retrieved 6 October 2015, from <http://timesofindia.indiatimes.com/city/delhi/DDA-planning-2500-affordable-service-apartments-for-elderly/articleshow/46307060.cms>**

This article explains briefly a unique housing development that aims to house the elderly. The aim is to provide a space for the elderly, from all social and economic backgrounds, where they can get along. Design considerations include barrier-free designs, easy accessibility to services and facilities, feasibility of financial model, etc.

### 2.3.6 South-East Asia (Except Singapore)

**Da Vanzo, J., & Chan, A. (1994). Living arrangements of older Malaysians: Who coresides with their adult children? *Demography*, 31(1), 95–113.**

The article reports that two-thirds of elderly Malaysians co-reside with an adult child. One of the factors is the government's housing priority to families if the elderly parents co-reside with them, mirroring some of the housing policies of neighbouring Singapore.

**Knodel, J., Saengtienchal, C., & Sittitrai, W. (1995). Living arrangements of the elderly in Thailand: Views of the populace. *Journal of Cross-Cultural Gerontology*, 10(1-2), 79–111.**

Drawing on 26 focus group discussions with elderly Thai individuals and adults with elderly parents, this paper seeks to provide perspectives on various issues in the elderly's living arrangements. The discussions highlight that government institutional facilities for Thai elderly are available only on a token basis and there are limited plans for expanding such facilities.

**Knodel, J., & Saengtienchai, C. (1999). Studying living arrangements of the elderly: Lessons from a quasi-qualitative case study approach in Thailand. *Journal of Cross-Cultural Gerontology*, 14(3), 197–220.**

The paper presents findings on the living arrangements of elderly in Thailand—that most elderly respondents lived on separate dwelling units adjacent to their married children's homes with separate addresses. It also discusses the challenges of using surveys to do measurements. These include defining a household, complex links to children who do not co-reside, different perspectives of living arrangements, etc. The suggestion is for careful and informed design survey questionnaires when conducting such studies.

**Zimmer, Z., & Kim, S. K. (2001). Living arrangements and socio-demographic conditions of older adults in Cambodia. *Journal of Cross-Cultural Gerontology*, 16(4), 353.**

The authors analysed the socioeconomic status of households of Cambodian older adults where they noted that 74.9 % of the population has the most basic house type, with someone aged 60 or older as the head of household. The most basic house type refers to those that did not have modern qualities such as piped water, electricity or a sewer or septic tank for a toilet. The authors proposed future research to develop a national policy to assist the older adults including housing.

**Buasri, V., Steggell, C. D., & Davis Burns, L. (2005). Innovativeness and acceptance of retirement housing in Thailand. *Housing and Society*, 32(1), 53–70. <http://doi.org/10.1080/08882746.2005.11430513>**

Thailand's public policy and social norms encourage the elderly to stay with children for family support. But, there is a gradual shift away from this norm among

young people due to Western influences. The article surveys the acceptance of 4 types of U.S. retirement housing options among pre-retirees in Thailand. Co-relation is found between acceptance and gender, income and innovative traits.

**Van Hoi, L., Thi Kim Tien, N., Van Tien, N., Van Dung, D., Thi Kim Chuc, N., Goran Sahien, K., & Lindholm, L. (2012). Willingness to use and pay for options of care for community-dwelling older people in rural Vietnam. *BMC Health Services Research*, 12, 36.**

This paper studies the willingness of older people (2240 households) in rural Vietnam to use and pay for different community living care models. It concludes that mobile team care is the most requested service and people's willingness to use services decreases when potential fees increase. Community-centric elderly care will be used if it is supplied by the government or associations and partly paid for by the individual.

**Knodel, J., & Pothisiri, W. (2015). Intergenerational living arrangements in Myanmar and Thailand: A comparative analysis. *Journal of Cross-Cultural Gerontology*, 30(1), 1–20.**

Although Myanmar and Thailand share similar cultural views, their economic developments are distinct from each other. The difference extends to living arrangements, related inter-generational support and housing quality, which are discussed in this article.

**Mohd Aini, A. Aziz, W. A., W. N. A., & Hanif, N. R. (2015, April). To move or not to move?: Exploring future housing plan of ageing communities in Kuala Lumpur. Paper presented at Asia Pacific Network for Housing Research (APNHR) Conference, Gwanju, Korea.**

This paper explores Kuala Lumpur elderly's preference for independent living in terms of current home satisfaction and future housing plans. Most of the elderly expressed that they are satisfied with their current housing arrangements and neighbourhoods, and have no plans to move, with reasons attributed to a sense of attachment and familiarity of the vicinity. The authors suggested to incorporate how living environment affect ageing when developing policies and measures for the elderly in Malaysia.

**Wijayanti, B. S., & Pandelaki, E. E. (2015). Toward housing for the elderly in Indonesia. *International Journal of Humanities and Social Science*, 5(6).**

This paper aims to study the extent of ageing population and elderly housing issues in Indonesia as well as the potential to provide housing options for the elderly. A literature review is done across several other countries to form the basis for a SWOT analysis, leading to the conclusion that Indonesia needs an integrated policy that takes into consideration its local culture.

## 2.4 Canada, United States and United Kingdom

**Golant, S. M. (1982). Individual differences underlying the dwelling satisfaction of the elderly. *Journal of Social Issues*, 38, 121-133.**

A survey was done on 400 people aged 60 and older living in a mid-western, middle class community of the United States. The study found that old people who have a greater degree of satisfaction with their residential areas are more skeptical of new environments, are happier with their lives, live in their current homes for a longer period of time, are home owners, and are less likely to be in financial trouble.

**Jirovec, R. L., Jirovec M. M., & Bosse R. (1985). Residential satisfaction as a function of micro and macro environmental conditions among urban elderly men. *Research on Aging*, 7, pp. 601–616.**

This study has two objectives. One is to evaluate the impact of housing (micro) and neighbourhood (macro) environmental conditions on residential satisfaction. The other is to find out the significance of housing relative to neighbourhood elements using a sample of urban elderly men in USA. The conclusion is that residential satisfaction is mainly based on neighbourhood environmental conditions like neighbourhood beauty, safety, interest level and quietness.

**Carp, F., & Christensen, D. (1986). Technical environmental assessment predictors of residential satisfaction: A study of elderly women living alone. *Research on Aging*, 8(2), 269-287.**

Residential satisfaction is found to be crucial to the general wellbeing of the elderly. This paper investigates residential satisfaction from the perspective of independent living arrangements. A study done on 88 elderly women living alone in the US reveal that the objective environmental variables (based on basic human needs) account for a similar percentage of the variance in satisfaction with housing and the variance in neighbourhood satisfaction.

**Peace, S. M. (1987). Residential Accommodation for dependent elderly people in Britain: The relationship between spatial structure and individual lifestyle. *Espace, Populations, Sociétés*, 281–290.**

The article first outlines the historical development of residential care for the elderly. Changes in the distribution of residential care are then provided. It concludes by examining the possible results of changes in the structure of residential care and lifestyle of individual elderly people.

**Pynoos, J. & Liebig, P. S., E. (1995). *Housing Frail Elders: International Policies, Perspectives, and Prospects*. Baltimore: Johns Hopkins University Press.**

This book synergises the experiences of several countries to highlight effective approaches and propose directions to create and adapt housing for older and frail

citizens. The chapters provides the latest in housing of countries such as Denmark, Sweden, Great Britain, United States, among others.

**Regnier, V., & Hamilton, J. (1995).** *Assisted Living for the Aged and Frail: Innovations in Design, Management and Financing.* New York: Columbia University Press.

This book addresses the challenge of how to design supportive and appealing environments for a society with an increasing ageing population. It encourages professionals to see the problem in a new angle, to recognise housing enriched with assisted living functionalities as an alternative to healthcare institutions. This book won the 1994 Progressive Architecture Award for Architectural Research.

**AARP. (2000).** *Fixing to Stay: A National Survey of Housing and Home Modification Issues.* Washington, D.C.: American Association of Retired Persons (AARP).

This is the report of a national survey of US citizens aged 45 and older conducted by AARP, which aims to study the opinions and behaviours of American elderly on housing related issues. A key area of focus is home modifications that improve safety and convenience.

**Balchin, P, & Rhoden, M. (2003).** *Housing Policy in the United States: An Introduction.* New York: Routledge.

This second edition of *Housing Policy in the United States* includes the impact resulting from the housing market collapse in 2007. It details policy changes by the Obama administration and contains data on housing trends and housing programme budgets.

**Angus, J., Kontos, P., Dyck, I., McKeever, P., & Poland, B. (2005).** *The personal significance of home: Habitus and the experience of receiving long-term home care.* *Sociology of Health and Illness*, 27(2), 161-187.

This article analyzes data from an ethnographic study of home care in 16 homes of Canada. Although respondents indicated a preference for home care instead of institutional care, the experiences and practical aspects demonstrate disruptions and changes due to healthcare needs.

**Gilroy, R. (2005).** *The role of housing space in determining freedom and flourishing in older people.* *Social Indicators Research*, 74(1), 141-158.

This paper explores the housing situation and sentiments of older people in the UK. Several conclusions are made. First, the home is a crucial component in the management of people's lives and thus, a critical determining factor for their quality of life. Second, special needs housing design is seen as a shift towards a balance between housing and elderly care. But, decreased space in such facilities may result in less positive mentality and psychological wellbeing among older people.

**Gitlin, L. N., Winter, L., Dennis, M. P., Corcoran, M., Schinfeld, S., & Hauck, W. W. (2006). A randomized trial of a multicomponent home intervention to reduce functional difficulties in older adults. *Journal of the American Geriatrics Society, 54*(5), 809-816.**

This reports the results of a randomised trial of a multi-component home intervention. In order to reduce older adults' functional difficulties, fear of falling and home hazards, a multi-component intervention was tested to allow those with chronic conditions to adaptively cope and enhance their self-efficacy. The multi-component intervention includes home modifications and training the older adults on how to use them, problem-solving strategies, fall recovery techniques, etc. The results show life quality improvements with on-going benefits over a year.

**Golant SM. (2008). Low-income elderly homeowners in very old dwellings: The need for public policy debate. *Journal of Aging & Social Policy, 20*(1), 1-28.**

This paper evaluates if low-income elderly people are sufficiently represented by the situations of general elderly population in the U.S. It calls for a public policy debate to help such old people to age in place in comparison to providing them alternative housing options.

**Gitlin, L. N., Hauck, W. W., Dennis, M. P., Winter, L., Hodgson, N., & Schinfeld, S. (2009). Long-term effect on mortality of a home intervention that reduces functional difficulties in older adults: Results from a randomized trial. *Journal of the American Geriatrics Society, 57*(3), 476-481.**

Although previous studies on home-based intervention have shown that it reduces functional difficulties, this study evaluates its long-term mortality effect and found that levels of survivorship have increased up to 3.5 years compared to their initial mortality risk level with minimal difference of up to 2 years. This proves that home-based intervention could be a non-clinical tool to delay the decline of functionality and mortality.

**Keenan, T. A. (2010). *Home and Community Preferences of the 45+ Population*. Washington, D.C.: American Association of Retired Persons (AARP).**

This article shows the results of a survey done in the US by AARP in 2010. Over 1000 people age 45+ participated. The findings show that the majority of older adults did not want to relocate, that they want to remain close to friends and family, and that they want to be in proximity to places they need to go to.

**Scharlach, A. (2011). Creating aging-friendly communities in the United States. *Ageing International, 37*(1), 25-38.**

By surveying almost 300 age-friendly community initiatives in the United States, the paper dives into the possibility of meeting the older person's needs without having to increase the government's intervention. It also deliberates over the

sustainability of existing efforts, and accessibility to less fortunate individuals and communities.

**Kerz, M., Teufel, J., & Dinman, M. (2012). OASIS: A community-based model for successful aging. *Ageing International*, 38(2), 122-136.**

This paper discusses the OASIS community-based model for successful ageing. Older Adult Service and Information System (OASIS) is a US-based national non-profit organisation that addresses the diverse needs and interests of people age 50+. It seeks to promote successful ageing through intellectual stimulation, active and independent lifestyles, and meaningful contributions using evidence-based programmes. It operates in more than 35 cities across the US.

**Orfield, S. (2013). Aging research, design education and the perceptual limits in seniors housing design: Development of a research-based design model for better aging environments. *Seniors Housing & Care Journal*, 21(1), 136–145.**

This paper reports the development of a research-based design model for elderly housing design. The Architectural Research Consortium started by Orfield Laboratories (Minneapolis, USA) has since 2009 studied the relationship between sensory and cognitive activity decline and proposed building performance standards for seniors housing architecture and design. This research-based design programme helps to overcome definitional problems when designing buildings for the older person.

**Weeks, L. E., Shiner, D., & Stadnyk, R. (2013). What should we build when they are ready to come? Developing evidence-based housing for older adults. *Seniors Housing & Care Journal*, 21(1), 69–85.**

Based on a random sample of 1670 older adults in Atlantic Canadian community, this paper seeks to find out the housing preferences of elderly adults and the factors that determine their housing preferences. It used hierarchical logistic regression to decide on the types of housing and support services preferred. It provides insights to housing developers in the public, private and non-profit sectors on how to be responsive to the needs of older community.

**McFadden, E. S., & Lucio, J. (2014). Aging in (privatized) places: Subsidized housing policy and seniors. *Journal of Housing For the Elderly*, 28(3), 268–287.**

This article reviews past and present housing policies and their impact for low-income elderly population in USA. It assesses the trend of traditional public housing being replaced with subsidised housing options and suggests options to ensure that vulnerable older population can afford their retirement housing in a market-driven economy.

**Branham, D. (2015, May 22). Appropriate, affordable seniors housing urgently needed. *The Vancouver Sun, Canada*. Retrieved from <http://www.vancouversun.com/health/Daphne+Bramham+Appropriate+affordable+seniors+housing+urgently+needed/11076057/story.html>**

In Canada, there is currently a shortage of affordable housing that caters to the needs of the elderly. In consequence, the waiting lists for elderly housing in some states are over 2 years. A senior advocate said that because of this, many of the elderly are rushed into nursing homes. Canada needs to take the cue from other countries including Singapore and Hong Kong about providing more affordable age-friendly dwellings.

**Brown, R. T., Miao, Y., Mitchell, S. L., Bharel, M., Patel, M., Ard, K. L. & Steinman, M. A. (2015). Health outcomes of obtaining housing among older homeless adults. *American Journal of Public Health, 105*(7), 1482-1488.**

The paper reports a 12-month prospective cohort study of 250 older homeless adults in Boston, Massachusetts, USA. Conducted in 2010 with a 12-month follow-up, the researchers evaluated the effect of obtaining housing on geriatric conditions and the use of acute medical care. It found that 41 % of the subjects who got housing within a year are less likely to suffer from ailments such as depression compared with those who remained homeless. It is also less likely for them to require extensive medical care.

**Collins, M. (2015). Design this old house. *Bloomberg Businessweek, 44*(18), 58**

This article describes elder-friendly devices that can be added to homes. They include grab bars in the bathroom, motion trackers and some other installations that may aid the elderly in their everyday lives.

**Gray, A. (2015). Social capital and neighbourhood in older people's housing. In F. Nyqvist & A. Forsman, *Social Capital as a Health Resource in Later Life: The Relevance of Context* (1st ed., pp. 65-85). Netherlands: Springer.**

The book chapter discusses the ways in which providers of retirement housing can best help residents to live comfortable lives in their old age.

**Madeddu, M., Gallent, N., & Mace, A. (2015). Space in new homes: Delivering functionality and liveability through regulation or design innovation? *Town Planning Review, 86*(1), 73-95.**

Over the past few years, physical space of homes in Britain is getting smaller. This article reviews space standards in Europe and found that these standards often help to prevent too many rooms being crammed onto shrinking floor plates. In particular, increased space in residential areas would contribute positively to family life with people of any age. Drawing on interviews with regulators, architects and other building professionals in Turin, Italy, the authors went on to show that an appropriate and context-specific balance between flexible regulation and innovation in design is often needed to attain greater functionality and liveability in new housing.

**O'Brien, M. E. (2015). *It's not paradise for everyone: The housing situation through the lens of local social service providers in Teton County, Wyoming***



**(Order No. 1588842). Available from ProQuest Dissertations & Theses Global. (1689397197).**

There are insufficient available and affordable homes in Teton County, Wyoming, thus leading to housing anxiety for those who have difficulty securing permanent housing. Taking this as the departure point, the author studies how housing anxiety affects people, both physically and mentally. He analyzes measures taken to address housing anxiety. People with housing anxiety are found to be more likely to suffer physical ailments due to exposure to unhealthy environmental stimulants. In the case of the elderly, they are more likely to be afflicted by premature ageing and alcohol abuse.

**Pleven, L. (2015, August 11). New senior housing raises concerns supply will outpace demand from baby boomers. *Wall Street Journal*. Retrieved from <http://www.wsj.com/articles/new-senior-housing-raises-concerns-supply-will-outpace-demand-from-baby-boomers-1439285401>**

Builders of senior housing are racing ahead of demand, with the supply quickly increasing in many major metropolitan areas across the Sunbelt and elsewhere in USA. Analysts predict this may lead to higher vacancy rates and lower rent increases for real estate firms that own housing for the elderly.

**Ramey, C. (2015). *Group wants parking converted to elderly housing. Wall Street Journal*. Retrieved 6 October 2015, from <http://www.wsj.com/articles/group-wants-parking-converted-to-elderly-housing-1432167889>**

An advocacy group, LiveOn NY, reported their findings from a study that there are 39 under-utilised parking lots in New York City, which can be potentially converted into housing for the older population.

**Taylor, A., Kirlew, M., & Pritchard, O. (2015). Building study: Courtyard housing for the elderly, Barking and Dagenham, Patel Taylor. *Architects' Journal*, 241(16), 29-39.**

Patel Taylor was assigned by the London Borough of Barking and Dagenham in August 2012 to develop a housing design suited to the needs of the borough's ageing population. The scheme is based on the concept of traditional English almshouse and designed to be low-cost, wheelchair accessible and comply with current national and local planning policy guidelines. Built on two brownfield sites, the 39 units of courtyard housing are designed so that the elderly could age as peacefully as possible in their own homes.

**Tweed, C., Humes, N., & Zapata-Lancaster, G. (2015). The changing landscape of thermal experience and warmth in older people's dwellings. *Energy Policy*, 84, 223-232.**

This qualitative study investigates traditional houses and new houses installed with low carbon heating systems. It found that old people are rather sensitive to the thermal conditions of a house and would take actions to improve the thermal

conditions in order to meet their preference. Some would value thermal comfort over energy efficiency. The low carbon heating system was observed not to cause much dissatisfaction though some respondents showed a preference for traditional heating means.

## 2.5 General (Other Regional Works)

**Golant, St. M. (1984). The effects of residential and activity behaviors on old people's environmental experiences. In I. Altman, M. P. Lawton & J. F. Wohlwill (Eds.), *Elderly People and the Environment*. New York: Plenum Press.**

This book chapter discusses how residential and activity behaviours of older people impact on their environmental experiences. This has implications for quality of life, which is often assessed by people's views and beliefs of the environment. Their responses to their environment's subjectively interpreted content are referred to in this chapter as people's environmental experiences or experiential environment.

**Baker, P. M. & Prince, M. J. (1990). Supportive housing preferences among the elderly. In Pastalan L. A. (Ed.), *Optimizing Housing for the Elderly: Homes not Houses*. New York: The Haworth Press.**

The authors of this book chapter believe that it is unlikely that extended family support systems will lead to reduced external community support services for the elderly. They add that many of the elderly would like to move into supportive housing should they be unable to care for themselves independently.

**Gonyea, J. G., Hudson R. B. & Seltzer G. B. (1990). Housing preferences of vulnerable elders in suburbia. In Pastalan L. A. (Ed.), *Optimizing Housing for the Elderly: Homes not Houses*. New York: The Haworth Press.**

This chapter discusses whether the older population living in the suburbs differ in their degree of satisfaction with their current living arrangements, the belief that they will need to relocate soon, and their degree of interest in varying residential options. The authors found that generally, older people have a high degree of satisfaction with their current living arrangements.

**Pastalan, L. A. (Ed.). (1990). *Aging in Place: The Role of Housing and Social Supports*. New York: The Haworth Press.**

This book presents and analyzes the issues associated with aging in place. It address the issue of control and how access to society and being allowed to have choices about services and facilities increases independence among the elderly.

**Hashimoto, A. (1991). Living arrangements of the aged in seven developing countries: A preliminary analysis. *Journal of Cross-Cultural Gerontology*, 6(4), 259–381.**

Using data from a 1987/1988 survey conducted in seven developing countries under an United Nations project, this article reviews living arrangements of the older population and concludes that the elderly typically choose to live together with their children despite changing socioeconomic and demographic settings. The findings suggest that individual characteristics and socioeconomic factors affect living arrangements of the elderly more in some geographical areas than others.

**Pynoos, J., & Regnier, V. (1991). Improving residential environments for frail elderly: Bridging the gap between theory and application. In J. Birren, J. Lubben, J. Rowe, & D. Deutchman (Eds.), *The Concept and Measurement of Quality of Life in the Frail Elderly* (pp. 91-117). San Diego, CA: Academic Press.**

This chapter discusses how residential environments for the elderly need to be improved. The authors seek to bridge the gap between theory (the theoretical framework used by researchers to understand the environment) and practice (application of decisions by housing designers and urban planners).

**Haber, G. M. (ed). (1992). *Building Design for Handicapped and Aged Persons*. New York: McGraw-Hill.**

This book has two parts. The first part focuses on barrier-free design in Japan, United States, Canada, Netherlands as well as Israel and Singapore. The second part covers the phenomenon of elderly persons ageing in place in subsidised housing and discusses possible future implications for ageing population.

**Callahan, J. J. (1993). *Ageing in Place*. Amityville, New York: Baywood Pub.**

The author raises two factors that have made ageing in place a prominent concern in policymaking. First is the exponential growth rate of people who own their own homes after World War II. The other is that many old people end up in nursing homes while they can and should age in place at home.

**Anderson, R. T., & Longino, C. F. (1994). Concepts and measurement of the housing quality of older adults: Developing a public-health approach. In E. W. Folts & D. E. Yeatts (Eds.), *Housing and the Aging Population: Options for the New Century*. New York: Routledge.**

This book chapter aims to assess housing quality of the older person. It emphasises that the home is a safe space for the elderly and discusses a public health framework for elderly housing quality.

**Knipscheer, C. P., Gierveld, J. D., Tilburg, T. G., & Dykstra, P. A. (Eds.). (1995). *Living Arrangements and Social Networks of Older Adults*. Amsterdam: VU University Press.**

This book elaborates on the importance of living arrangements and social relationships in the lives of older people. It discusses the availability of relatives, structure of the family and social networks, among other things.

**Brink, S. (Ed.). (1997). *Housing Older People: An International Perspective*. New Brunswick, N.J.: Transaction Publishers.**

This book covers two major public policy debates. The first is about who has to take care of elderly people. The second is how income, health, social services and housing need to work in tandem to support the older person. The solutions to these two debates may be different in different countries. However, all countries has the overarching aim to promote a supportive environment to the elderly. Countries reviewed include Australia, Denmark, Hong Kong, India, Israel, Japan, Korea, the Netherlands, Singapore and Taiwan.

**Harrison, J.D., & Parker, K. J. (1998). *Getting it right: Housing design for an ageing society in a changing world*. *International Journal for Housing Science and Its Applications*, 22(4), 273–283.**

As the elderly population in the world increases, changes in housing provision that take account of the importance of designing with improved standards of accessibility and safety will become pertinent. The authors compared prevailing European standards and the likely effectiveness of future Asian initiatives. The authors propose the need for higher standards of housing for the elderly and a wide range of alternatives for elder-friendly housing in the future.

**Liebig, P. S. (2001). *International perspectives on housing frail elders*. *Journal of Architectural & Planning Research*, 18(3), 208–222.**

This article compares the different approaches to housing vulnerable older people in Western industrialised nations against those of the recently industrialised countries and developing Asian nations.

**Andrews, G. J., & Phillips, D. R. (2005). *Ageing and Place: Perspectives, Policy, Practice*. New York: Routledge.**

This book shares a variety of views and multi-disciplinary research on how space and place play an important role in older people's lives and those who are taking care of them. Some of the topics covered include issues and perspectives in geographical gerontology, home as the physical site for providing care, physical ageing and use of space, etc.

**Rowles, G. D., & Chaudhury, H. (Eds.). (2005). *Home and Identity in Late Life: International Perspectives*. New York: Springer Publishing Company.**

Offering international and multi-disciplinary viewpoints, the authors examined the definition of home to the older person and the ways in which this meaning could be sustained, endangered or adapted according to changes related to growing old.

**Rosenfeld, J. (2006). Senior housing globalized. *Implications*, 6(9), 1–6.**

This article describes recent developments in senior housing in different countries. The data collected by the author hints at two important issues faced by traditional societies in the design of housing for the elderly. One is the possible encounter between Western code of regulations and cultural belief systems. The other is the contradiction with cultural norms concerning privacy and intimacy in Eastern cultures.

**Dahlin-Ivanoff, S., Haak, M., Fänge, A., & Iwarsson, S. (2007). The multiple meaning of home as experienced by very old Swedish people. *Scandinavian Journal of Occupational Therapy*, 14(1), 25-33.**

This study aims to find out the meaning of home from the perspective of elderly who live alone in Sweden. The authors have categorised the responses into two key areas: the significance of home in terms of security and freedom, and conclude that the home environment influences old people's way of life and activities that they may engage in.

**Oswald, F., Wahl, H.-W., Schilling, O., Nygren, C., Fänge, A., Sixsmith, A., Iwarsson, S. (2007). Relationships between housing and healthy aging in very old age. *The Gerontologist*, 47(1), 96-107.**

This paper explores the correlation between aspects of objective and perceived housing and healthy aging. The relationships between housing and healthy ageing in five European countries are compared, namely, Sweden, Germany, Britain, Hungary and Latvia. The findings imply that home modification and relocation should be negotiated with older people rather than prescribed to them.

**Watson, C. J., Murie, A., & Groves, R. (2007). *Housing and the New Welfare State: Perspectives from East Asia and Europe*. Aldershot, England: Ashgate Pub.**

East Asian countries have been studying European systems of housing and related policies, especially that of United Kingdom. In this volume, six East Asian countries—Singapore, Hong Kong, China, Republic of Korea, Japan and Taiwan—are compared with housing systems in United Kingdom and other European countries.

**World Health Organization. (2007). Part 7. Housing. In *Global Age-friendly Cities: A Guide* (pp. 30–37). Geneva: World Health Organization. Accessed at [http://www.who.int/ageing/publications/Global\\_age\\_friendly\\_cities\\_Guide\\_English.pdf?page=35](http://www.who.int/ageing/publications/Global_age_friendly_cities_Guide_English.pdf?page=35)**

Based on evidence from focus groups discussions with caregivers and service providers, this report by the World Health Organisation presents older people's descriptions of the advantages and limitations of their city living in 8 areas including housing, which is featured in Part 7. Part 7 includes an age-friendly housing checklist, covering essential factors to be considered when providing housing for the elderly.

**Eunju, H., Glass, A. E., Gutzmann, J., & Kyeng Joo, S. (2008). The meaning of a livable community for older adults in the United States and Korea. *Journal of Housing for The Elderly*, 22(3), 216-239.**

A study on what liveability means to those working with older adults was carried out. The two regions covered in this study are Minnesota in the United States and Yangcheong-gu in the Republic of Korea. The results show that a consumer-driven approach and working in tandem with the community are necessary to achieve liveability for the elderly. Four common themes on liveability are identified, that is, affordability, safety, accessibility and active engagement.

**Fänge, A., & Dahlin-Ivanoff, S. (2009). The home is the hub of health in very old age: Findings from the ENABLE-AGE project. *Archives of Gerontology and Geriatrics*, 48(3), 340-345.**

This study explores the relationship between health and home from the experiences of Swedish elderly who live alone. The results reveal that the home is ‘the hub of health’, both as a source of support for health as well as an inner driving motivation to maintain good health. The implication is a need to consider health in intervention for optimum housing arrangements for the elderly.

**Feddersen, E., Lüdtke, I., & Braun, H. (2009). *Living for the Elderly: A Design Manual*. Boston: Birkhäuser.**

With more than 15 expert contributions, this manual provides the principles and processes of planning and design for the elderly, providing insights from sustainability to the design of home interiors and outdoor spaces.

**Lui, C.-W., Everingham, J.-A., Warburton, J., Cuthill, M., & Bartlett, H. (2009). What makes a community age-friendly: A review of international literature. *Australasian Journal on Ageing*, 28(3), 116-121.**

This article provides content analysis findings of the extant literature on age-friendly communities. The literature includes peer-reviewed articles, ageing research institutes websites or databases as well as grey literature searched and identified via Google search engine. Emerging policy trends and models are evaluated. Future research focus and directions are recommended.

**Pynoos, J., Caraviello, R., & Cicero, C. (2009). Lifelong housing: The anchor in aging-friendly communities. *Generations*, 33(2), 26–32.**

This article describes the effects of housing in elder-friendly communities, the problems faced when living in conventional housing as people grow older and the necessity to adapt existing housing for older people. It discusses various ways to help the elderly with home modification, universal design, relocation options and resources for low-income older people.

**Glass, A. P., Chen, L.-K., Hwang, E., Ono, Y., & Nahapetyan, L. (2010).** A cross-cultural comparison of hospice development in Japan, South Korea and Taiwan. *Journal of Cross-Cultural Gerontology*, 25(1), 1–19.

This paper compares the origins and growth of hospice and palliative care (HPC) in Japan, Republic of Korea and Taiwan. It discusses how HPC started, the meanings behind the language and symbols, religious reasons, cultural issues, how HPC is used, government involvement in HPC and the problems that affect people's choice and decision to use HPC. It identifies the factors that influence people's perceptions and acceptance of hospice.

**Chen, S. (2011).** Historical and global perspectives on social policy and "Aging in Community". *Ageing International*, 37(1), 1-15.

An introductory article to a special issue, it puts together issues to get an in-depth understanding about ageing, family, community and social policy. It addresses housing issues such as "Aging in Place through Home Modifications", which encourages and reduces forced move from current residential locations, avoiding relocation stress syndrome or transfer trauma among older people.

**Chui, E. (2012).** Caring for our seniors – Private issue or public? The Asian scene. *Journal Of Asian Public Policy*, 5(1), 51-70.

This paper discusses the responsibilities of providing housing, health and personal care, psychosocial emotional care, financial security and old people as useful human resource in Asian countries that have an increasing ageing population. It concludes that this responsibility should be an effort made in tandem between the public and private domains.

**Doling, J., & Ronald, R. (2012).** Meeting the income needs of older people in East Asia: Using housing equity. *Ageing & Society*, 32(3), 471-490.

This paper examines policy responses of three East Asian economies: Japan, Singapore and the Republic of Korea. Home ownership for the elderly is intended to make them less reliant on family support. Governments have introduced mechanisms where older people are able to realise some of the equity they have developed through the housing market. The mechanisms include downsizing, rental solution and forms of reverse-mortgage products.

**Man, Y., Stephens, M., & Chen, J. (2013).** *The Future of Public Housing: Ongoing Trends in the East and the West*. Heidelberg: Springer.

This volume compares public housing in Asian countries (China, Taiwan, Singapore, Japan, Republic of Korea) with those in the West (North America, Sweden, Netherlands and UK). It traces the development of housing and discusses the policies for public and social housing in these countries with discourse on elderly households and housing for seniors.

**Affi, M., Parke, B., & Al-Hussein, M. (2014). Integrated approach for older adult friendly home staircase architectural design. *Automation in Construction*, 39, 117–125.**

This paper presents a methodology to investigate the risk of falling associated with the architectural design of staircase in order to suggest best practices to create elder-friendly design that enhances safety for older adults. The proposed methodology uses the concept of evidence-based assessment to evaluate staircase elements such as handrail and step design.

**Lux, M., & Sunega, P. (2014). The impact of housing tenure in supporting ageing in place: Exploring the links between housing systems and housing options for the elderly. *International Journal of Housing Policy*, 14(1), 30–55.**

The paper examines the correlation between the range of housing aid provided to support ageing in place and the housing system. Research was conducted on eight European countries with various housing and welfare systems: Austria, Germany, Czech Republic, Hungary, Italy, Poland, Slovakia and Slovenia. The results show that with less people owning homes and more living in rental housing, there is a higher probability for a wider supply of housing subsidies and options available to the elderly along with more innovative features.

**Roelofsen, P. (2014). Healthy ageing and the built environment. *Intelligent Buildings International*, 6(1), 3–10.**

The paper argues that in the absence of standards, guidelines and specific requirements for the physical environment for the elderly in Europe at the present time, housing for the older population is often a handicap rather than a comfortable, inspirational or safe environment. It offers a first translation of a guideline for indoor environment (acoustics, light, air quality and indoor thermal climate) for independent and vital elderly. The effect on non-vital elderly (i.e. those suffering from dementia) is not included in this study.

**White, G., Evans, R., Connelly, K., & Caine, K. (2014). Designing aging-in-place technologies to reflect the lifestyles and precious artifacts of urban and rural older adults. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 58(1), 145–149.**

This paper aims to fill the gaps of past studies on how technologies could support the lifestyles of the elderly in their homes. The study specifically looks at the lower socioeconomic status group within their homes in both rural and urban settings. The findings conclude with insights for researchers and designers in building technologies to support this population group to age in place.

**Andersson, J., & Rönn, M. (2015). Searching for innovative design: Architectural competitions in the silvering Swedish welfare state. *Journal of Housing for the Elderly*, 29(1-2), 24-52.**



This paper showcases the results of three architectural competitions on elderly housing. It concludes that the connection between architectural design and the needs of the older population has not been properly addressed. There is a requirement for further work in the area of housing for Swedish older people.

**Haak, M., Slaug, B., Oswald, F., Schmidt, S. M., Rimland, J. M., Tomsone, S., Ladö, T., Svensson, T. & Iwarsson, S. (2015). Cross-national user priorities for housing provision and accessibility - Findings from the European InnovAge project. *International Journal of Environmental Research and Public Health*, 12 (3), 2670-2686.**

This paper reports the findings from the European InnovAge project, which aims to develop an innovative ICT tool to help the elderly in Europe to search for better housing. Using a participatory design focus and user involvement (experts, professionals and people with different disabilities), identifying differences in potential users, user priorities, housing options and accessibility will support the development of a user-friendly tool, which allows the older adult to search for housing options in a more efficient manner.

**Jolanki, O. & Vilkkö, A. (2015). The meaning of a “sense of community” in a Finnish senior co-housing community. *Journal of Housing for the Elderly*, 29(1), 111-125.**

Co-housing schemes in Finland are designed to enable social contacts and mutual support for the older adults. A study was done on a senior co-housing community in Finland. The aim is to find out from the older residents what “sense of community” means to them by getting examples about how a sense of community becomes visible in their daily lives. The findings reveal that the development of a sense of community is an on-going process and that instead of ageing in place, later life moves (motivated by factors such as the search for a better life and happiness) to a new living environment of their own liking can proactively improve and offer a meaningful life in old age. It can enact housing solutions that bring about a sense of community among the elderly.

**Jónsdóttir, S., Jónsson, J., & Sigurdardóttir, S. (2015). Housing for older people in Iceland: Apartments and nursing homes. *Journal of Housing for the Elderly*, 29(1-2), 197-208.**

More than 90 % of the elderly people in Iceland live independently in their own homes. Nevertheless, the service and home care are not in pace to cater to the accompanying needs of an ageing population. Guidelines on integrated service housing need to be in place, from the government. Such service will improve the elderly's quality of life for better independent living.

**Kaplan, D., Andersen, T., Lehning, A., & Perry, T. (2015). Aging in place vs. relocation for older adults with neurocognitive disorder: Applications of Wiseman's behavioral model. *Journal of Gerontological Social Work*, 58(5), 521-538.**

Wiseman's 1980 Behavioural Model of Elderly Migration is a framework that provides insights into behaviours and conditions of the older person. Understanding Wiseman's model may enable those working with old people to make certain that the elderly reside in areas that can fulfil their wants and needs.

**Verma, I., & Huttunen, H. (2015). Elderly-friendly neighborhoods: Case Lauttasaari. *Journal of Housing for the Elderly*, 29(1-2), 92-110.**

This paper studies the ways that the aged could be active participants by allowing them to participate in the planning and assessment process of developing local neighbourhoods. The crucial factors for aging in place are accessible housing and local networks for elderly services.

**Wasik, J. (2015, July 10). Making decisions on elder housing may take a team effort. *The New York Times*. Retrieved from [http://www.nytimes.com/2015/07/11/your-money/making-decisions-on-elder-housing-may-take-a-team-effort.html?\\_r=1](http://www.nytimes.com/2015/07/11/your-money/making-decisions-on-elder-housing-may-take-a-team-effort.html?_r=1)**

Deciding where an elderly person is to reside is not a simple task. This is because the older person can have impaired mobility, health problems and may require prolonged care. It therefore requires team effort. The article mentions that such team comprises of different professionals including geriatric care managers, attorneys, financial planners and general practitioners.

**Ytrehus, S. (2015). The role of the housing allowance for the elderly in Norway: Views of recipients. *Journal of Housing for the Elderly*, 29(1), 164-179.**

This article discusses housing allowance, which is an economic benefit for the elderly in Norway. It reports a study of Norwegian elderly who have been receiving such housing allowances. The results indicate that they still feel financially in need despite the perceived importance of financial support that the allowance offers.