Singapore

The 2018 Aging Readiness & Competitiveness Report:
Small Innovative Economies

AARP®
Real Possibilities

FP ANALYTICS

Overview

Singapore, a sovereign city-state in Southeast Asia, is known as the 20th century's most successful development story, having transformed from a low-income country to holding the third highest per capita income within 50 years.[1]

Today, the economy is at the outset of another transformation—this time demographic. Next year, Singapore will become an aged society, having crossed the United Nations threshold of 14 percent of its population age 65 and older, having taken just 19 years to complete the transition from an aging society. Over the next decade, Singapore will become a super-aged society, defined as people age 65 and older exceeding 21 percent of the total population. And its older population will double by 2030 (Figure 1).[2] This demographic shift is driven by the aging of its baby-boom generation, along with declining fertility rates and extended life expectancy. Singapore's baby boomers, born between 1947 and 1964, account for 30 percent of the total population, and started to turn 65 years old in 2012. Singapore is

Figure 1. People Age 65 and Older as Percentage of Total Population

A city-state and island country in Southeast Asia, Singapore is one of the fastest aging high-income societies.
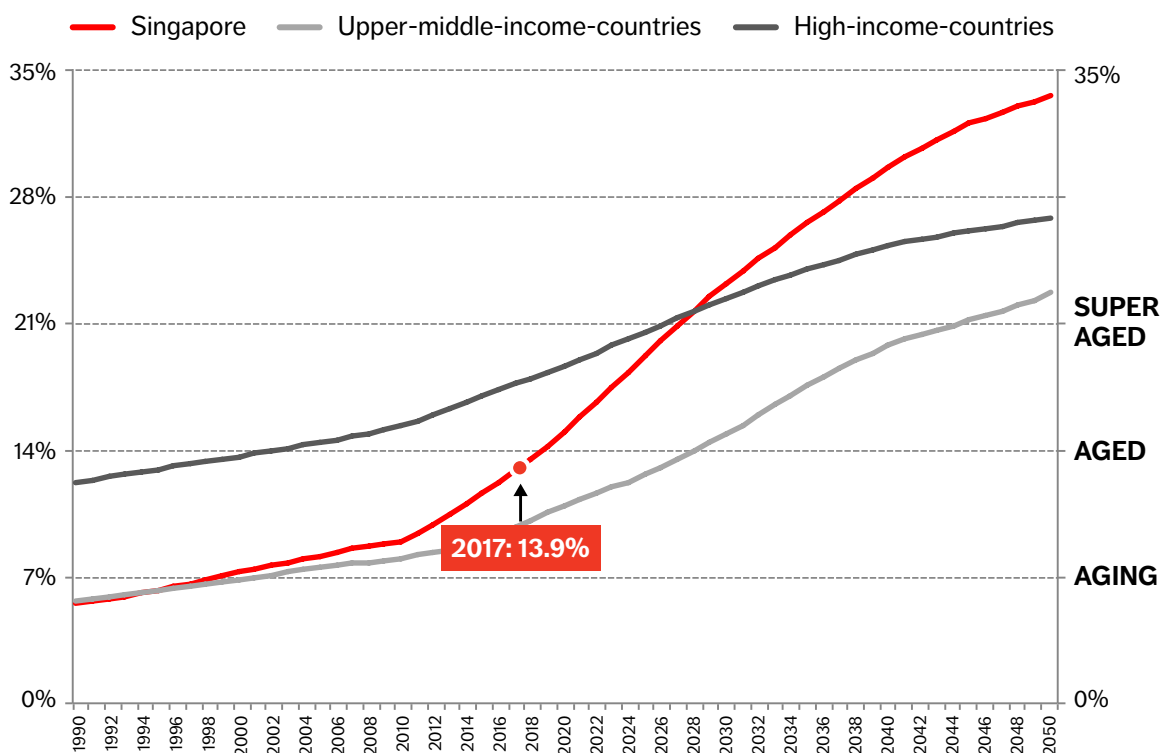
Source: United Nations, Department of Economic and Social Affairs, Population Division

ranked fourth in life expectancy, trailing only Hong Kong, Japan, and Italy. It has among the world's lowest fertility rates, with only 1.16 average births per woman.[3]

The same long-term, strategic approach to planning that enabled the Singaporean government to deliver rapid economic growth has informed the development of the country's approach to aging. This

has been an issue on its policy agenda since the 1980s— long before the society became an aging society at the end of the century when the share of people age 65 and older in the total population exceeded seven percent. Conscious of the country's geographic and natural resource constraints, the government has emphasized self-reliance and responsibility sharing among individuals, family,

community, and the state. This philosophy is manifest in every aspect of its social safety net related to aging, covering pensions, health care, and long-term care.

Focused on its role of enabler, the government has made dramatic achievements in building accessible infrastructure, affordable housing, and a network of non-profit organizations. Already one of the world's most efficient health care systems, Singapore is stepping up the effort to develop its long-term care system, with a focus on availability and affordability. Meanwhile, early efforts are being made by some startups and leading non-governmental organizations (NGOs) to develop innovative technology and models to improve the quality of care.

The government has been keen to capitalize on the economic opportunity among the older population, with substantial progress made in tapping the productive potential among older workers. Its 2012 retirement reform enables older people to work longer today, while its top-down push for lifelong learning through the SkillsFuture initiative will have a far-reaching impact on the future older labor force. In comparison, although boasting among the world's best information and communications technology (ICT) infrastructures, the country sees the need for more effort to improve digital inclusion among older adults and to develop digital technology and services that support independent and quality living.

Ecosystem for Policy and Social Innovation

Constrained by scarce natural resources, high population density, and small landmass, Singapore is seeking innovative solutions to adapt to a rapidly aging population.

Key enablers include effective governance combining leadership from state agencies with a robust consultative mechanism and a culture fostered by the government to value self-reliance and collective responsibility. Built on this enabling ecosystem, policy and social innovation in Singapore is heavily driven by the government and notable for its proactive action and holistic solutions, with a growing push to promote cross-sectoral collaboration.

Key Enablers

Singapore's ability to adapt to demographic change through innovation is attributed to a government that is highly interventionist, effective, and meritocratic; established institutions that shape the government's engagement with other stakeholders; and values of self-reliance and responsibility sharing.

The central government, which has been controlled since the 1960s by the People's Action Party, has delivered dramatic economic growth through a highly interventionist approach to governance, a focus on long-term strategic planning, and effective governance. Political continuity has facilitated the long-term orientation of policymaking. Dating back to the country's separation from Malaysia in 1965— when the country was in dire economic straits and grappling with a relative absence of private entrepreneurs— this active involvement of the government across socioeconomic sectors[4] remains in place today, even as market mechanisms have been widely integrated into the economy.

One example is in the public housing sector. To address housing shortages in the face of the influx of immigrants and the absence of private-sector capacity, the government established the Housing and Development Board (HDB) in 1960 to take the lead role across the housing value chain. It followed with a 1966 law empowering the government to acquire land at low cost

for public use and established a housing financing institution in 1968.[5] These policy efforts have led to a large public housing sector. Today the state owns 90 percent of land in Singapore. Eighty percent of the population lives in HDB housing, with the majority owning their houses.[6] "The large HDB housing sector has enabled the government to respond to the evolving needs of the rapid aging population," said Debbie Loo, former Adjunct Lecturer at Singapore Polytechnic and an urban planning expert.[7]

Singapore's government boasts among the world's most effective systems of governance, thanks to its emphasis on meritocracy. According to the World Bank's Worldwide Governance Indicators, Singapore held the top place in terms of "government effectiveness" and "regulatory quality" as of 2016.[8] Since gaining independence, Singapore has made meritocracy a key principle for public administration, valuing the factors of qualification and performance over family relationships in determining one's success.[9] As a result, technocracy— or expert rule—is deeply rooted in recruitment and talent management, with civil servants expected to be technically minded, utilitarian, and long-term thinkers.[10]

This mindset is manifest in policymakers' openness to integrate best practices from other countries into their own policy frameworks. For example, Singapore looked to the experience of western countries and Japan in developing age-friendly housing in

the 1990s and has continued to introduce new schemes over time to accommodate the diverse needs of older adults. Similarly, after studying other developed countries' policies on extending older people's time in the labor force, the government decided that simply raising the retirement age would not be sufficient, and opted to follow Japan's example in passing legislation to facilitate the re-employment of older workers.

The government also has established mechanisms to engage with stakeholders, born of a tradition of tripartism, which facilitates consultation and negotiation of national policies among the government, labor unions, and employers' associations. Tripartism emerged just after the country gained independence, when Singapore was seeking to create jobs and achieve industrialization by attracting foreign investment. Responding to the government's call, labor unions started to shift away from the traditionally confrontational labor-management relations and work together with the government and employers' associations to meet a common national goal for development. Since the establishment of the National Wage Council in 1972— the first tripartite institute focused on wage guidelines— tripartism has been institutionalized as a mechanism in various aspects of public governance.[11]

Today there is a Tripartite Committee on Employability of Older Workers, in which representatives from the government, labor unions, and employers' associations have developed guidelines for employers to re-employ older workers beyond the statutory retirement age. Additionally, the government has consulted with major trade unions including the National Trades Union Congress and the Singapore National Employer Federation when developing policies related to age-friendly workplaces.

Finally, while deeply engaged in the provision of affordable housing, efficient health care, and quality education— the government has long strived to breed a culture of self-reliance, arguing that Singapore cannot afford generous social benefits with the scarcity of natural resources. While acknowledging the state's responsibility in providing a safety net, it also stresses that the state should be the last resort. This philosophy is manifest in its social benefits policies for older adults and the Many Helping Hands (MHH) approach. Individuals are expected to be responsible for planning and preparing for aging, while the family and the community function as the first and second lines of care and support. To ensure the holistic well-being of older people, the government has adopted the MHH approach, emphasizing a partnership with individuals, family members, community organizations, and other stakeholders.[12]

Aligned with the MHH approach is the government's support for voluntary welfare organizations (VWOs), non-profit organizations typically set up as community organizations or charities to provide social services that benefit the community.[13] To leverage the network of these organizations in their communities, and to enhance their capacities, Singapore has adopted a dollar-

Figure 2. Driving Forces of Innovation and Cross-Sector Collaboration
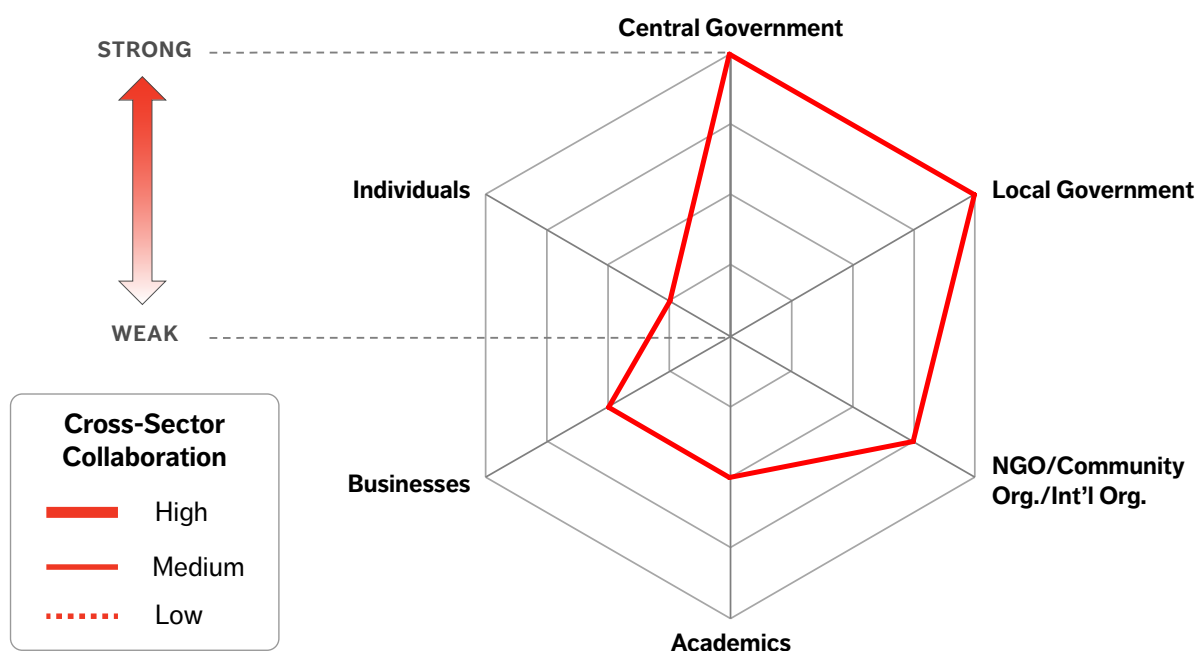
As a city-state, Singapore has only one level of government, so "Central Government" and "Local Government" are considered together to represent the government's overall performance

for-dollar matching scheme. Under the scheme, the government matches every dollar a VWO receives from donors.[14] In doing so, the government aims to "help VWOs raise funds that can be used in their capability development," said Melissa Khoo, Group Director in the Ministry of Health Ageing Planning Office.[15] Today, there are more than 450 VWOs in Singapore, 148 of which specialize in aging and disability services.[16]

Without question, the government is the primary driving force for policy and social innovation in Singapore, but engagement and collaboration with outside stakeholders is critical to its success. However, as multiple experts point out, to an extent the government-driven model has contributed to the underrepresentation of bottom-up initiatives, and cross-sectoral collaboration between non-governmental stakeholders remains to be strengthened.

Attributes in Aging-Related Innovation

Built on the government's enabling ecosystem, Singapore's effort to cultivate a successfully aging society is shaped by a top-down approach featuring proactive work and holistic solutions. Although sharing of responsibility does not guarantee cross-sectoral collaboration, some pilot projects undertaken by the government and leading NGOs could serve as strong models, provoking further efforts.

Singapore's technocrat policymakers put the issue of an aging population on the policy agenda well before the demographic shift became a pressing issue. "Aging issues have long been under the radar of the Singaporean government, who has been constantly introducing pre-empting programs," said Tan Ern Ser, Associate Professor of Sociology at National University of Singapore.[17]

As early as 1982— 17 years before Singapore became an aging society— the government started to study the implications of an aging population. A national survey of senior citizens, first conducted in 1983, has been carried out periodically to examine and monitor the characteristics and needs of the older population. Built on these works, in 1999 the government released a comprehensive plan, establishing a vision of successful aging and defining guiding principles that uphold the MHH approach.[18] Recognizing the dynamics and complexity of the aging issue, the government has

"Aging issues have long been under the radar of the Singaporean government, who has been constantly introducing pre-empting programs."

– TAN ERN SER, Associate Professor of Sociology at National University of Singapore

since continued to develop action plans, with the latest Action Plan on Successful Ageing announced in 2015. This covers 10 areas ranging from employability and lifelong learning, to social engagement and inclusion, to housing and transport.[19]

In line with its comprehensive action plans, the government has applied this holistic approach to individual initiatives, evident in its integration of support for aging-in-place efforts in public housing developments. To adapt to the diverse needs of older adults, the HDB has provided small apartment models and offered affordable lease options for those who live independently. And for those living with children and grandchildren, it offers 3-generation flats— apartments that enable mutual care and support within families and help to strengthen intergenerational bonds. Additionally, its latest pilot project, Kampung Admiralty, is also aimed at building a self-contained retirement community that meets the specific needs of older adults.

With well-developed physical infrastructure and a statewide network of NGOs, increasing attention is focused on integrating existing resources and strengthening cross-sectoral collaboration. One government effort is the Community Network for Seniors, which aims to leverage social services facilities across the public housing system and mobilize community stakeholders to promote active aging and prevent isolation. First launched in three districts in 2016, the model will expand nationwide by 2020. Meanwhile, the Community for Successful Ageing, an initiative led by the Tsao Foundation, aims to create a community-based system that provides integrated health care, social care, and engagement services for older adults—another model built on collaboration across sectors.

Community Social Infrastructure

While emphasizing the responsibility of individuals and families in successful aging, Singapore's government has endeavored to cultivate a robust, age-friendly community environment.

Having achieved high levels of accessibility in physical infrastructure and development of a community-level service network, it is increasingly focused on integrating existing social service facilities as well as incorporating support for aging into public housing programs. With the early success of several pilot models, including the Community Network for Seniors and 3-generation flats, the government is now working on scaling these efforts.

Social Connection

Singapore's multiethnic society is predominantly Asian— comprising 74.3 percent Chinese, 13.4 percent Malaysian, and nine percent Indian — who share a cultural value of strong family ties and respect for older adults.[20] According to the latest National Survey of Senior Citizens in 2011, 69 percent of respondents age 55 and over had daily contact with their children.[21] In the 2013 Housing and Development Board's Sample Household Survey, 84.5 percent of respondents age 65 and older reported confidence in their children for physical, emotional, and financial support.[22]
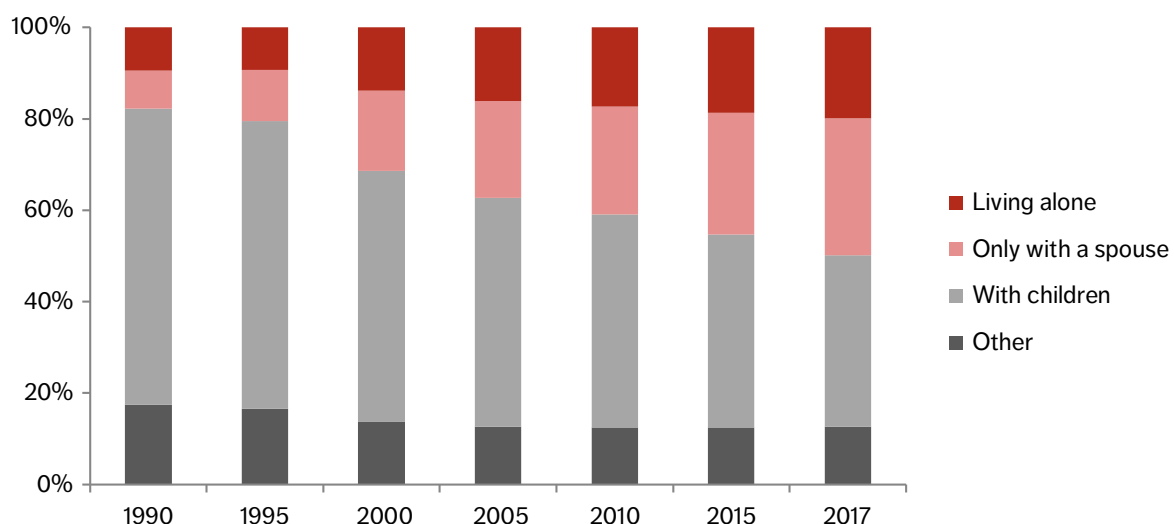
Although older adults are in regular contact with family members, intergenerational households are declining. With 98 percent of people age 65 and older living at home,[23] the percentage of those who live alone or with a spouse in the total number of households headed by adults age 65 and older has nearly tripled since 1990, reaching 49.9 percent as of 2017 (Figure 3).[24] This shift is largely due to family structure changes resulting from birth rate declines and urbanization. It has become common that children move out after they get married rather than live together with their parents.[25] As the baby-boom generation continues to age, the number of older adults who live independently is growing rapidly, having nearly doubled over the past decade.[26]

In response to this trend, the government has emphasized filial obligation and stressed that family remains the first line of support and care for older adults. In 1995, Singapore introduced a filial support law called the Maintenance of Parents Act, which allows residents age 60 and older who are unable to maintain themselves adequately to claim maintenance support from their children, in the form of either a lump-sum payment or a monthly allowance.[27] Although the law doesn't specify the penalty for non-compliance, it provides a mechanism where filial obligations promote an increasing number of intergenerational family discussions on retirement planning and asset transfers. According to the 2011 National Survey of Senior Citizens, 76.4 percent of those ages 65 to 74 and 80.2 percent of those age 75 and older reported cash transfers from children as their main source of income.[28]

Social Engagement and Assistance

While stressing the important role of individuals and families in supporting comfortable and active aging, the government is keenly working to strengthen community-level services that engage and assist older adults. Following the MHH philosophy, the government has focused on empowering local stakeholders, including developing VWOs through financial aid. Today, about 30 percent of VWOs specialize in aging and disability services. With a developed VWO network, the government has increasingly focused on optimizing the

Figure 3. Living Arrangement, Percentage of Households Headed by People Age 65 and Older

Legend:
- Living alone
- Only with a spouse
- With children
- Other

X-axis: 1990, 1995, 2000, 2005, 2010, 2015, 2017
Y-axis: 0%, 20%, 40%, 60%, 80%, 100%

Source: Department of Statistics Singapore

utility of existing facilities and services, with major efforts including the pilot project Community Network for Seniors (CNS).

Launched in 2016 in three districts, the CNS project is designed to efficiently serve diverse social and care needs of older adults by integrating existing social services facilities and mobilizing community stakeholders across the public housing system, which currently accommodates 80 percent of the population.[29] The Ministry of Health, which funds and oversees the CNS, set up a team of full-time officers in each community that is responsible for identifying local needs and available resources and coordinating with stakeholders including VWOs, health institutions, schools, and

businesses to provide tailored support for older adults.[30]

The services fall into the three ABC domains—Active Aging, Befriending, and Care and Support— targeting three different groups of older adults:

- The A domain services are focused on keeping healthy older adults active by organizing social activities such as festival galas and weekend gatherings.

- The B domain services engage lonely older adults by providing emotional and psychological support.

- The C domain services are focused on providing care services to older adults.[31]

To be a friend to those experiencing loneliness, VWOs mobilize older volunteers called befrienders to pay home visits to vulnerable peers. Befrienders receive the training to be able to spot changes in mood, physical condition, or living environment, and know to contact care providers at health institutions when detecting potential risks. This initiative achieves two purposes: one is to prevent social isolation among vulnerable older adults, and the other is to help older volunteers stay socially active and have a sense of contribution.[32]

The pilot project has demonstrated encouraging outcomes. As of February 2018, 70,000 older adults are engaged in preventive health and active aging activities in the CNS.[33] The government plans to promote the model nationwide by 2020. Collaboration across government and community-based stakeholders is the key element of this model, while the high concentration of the population residing in the public housing system allows for extensive outreach to a majority of the older population. "The collaboration [across multiple sectors] has been integral to the efficient implementation of widespread improvement and intervention. This is certainly an innovative effort by the government to capitalize on existing infrastructure for a land-scarce, but highly-populated, city," said Debbie Loo, former Adjunct Lecturer at Singapore Polytechnic and an expert on urban planning.[34]

"The collaboration [across multiple sectors] has been integral to the efficient implementation of widespread improvement and intervention. This is certainly an innovative effort by the government to capitalize on existing infrastructure for a land-scarce but highly populated, city."

– DEBBIE LOO, former Adjunct Lecturer at Singapore Polytechnic and expert on urban planning

Housing

In addition to developing community-based services, the government has also incorporated the strategy of supporting aging in place in its public housing scheme. Learning from western countries and Japan, Singapore first introduced the Studio Apartments program in 1998 to provide small, 35- or 45-square-meter, affordable apartments with age-friendly features for independently living older adults.[35,36] Over time, it has increasingly looked beyond the shelter function of housing and focused on adapting housing and community designs to facilitate intergenerational support, as well as social participation and access to services for older adults. "Housing goes beyond the provision of shelter. It is closely

associated with enabling social interaction and community development," said Belinda Yuen, Research Director of Lee Kuan Yew Centre for Innovative Cities at Singapore University of Technology and Design.[37]

In 2013, to promote living arrangements that enable mutual care and support within families, the government started to provide affordable housing options for multi-generational families, called 3-generation flats (3Gen flats). "As many couples find it difficult to go a long way to visit parents with their busy work schedules, 3Gen flats enable them to take care of their parents while enjoying the personal space with bigger room," said Thang Leng Leng, Deputy Director of the Centre for Family and Population Research at National University of Singapore.[38]

Each 3Gen flat has three bathrooms and four bedrooms, and is 115 square meters. The 3Gen flats are relatively affordable as well, and are offered at SGD 315,000 to SGD 500,000 (USD 229,000 to USD 364,000).[39] To qualify for purchasing such apartments, a family must consist of a couple and the parents of either spouse. All of the 1,500 existing 3Gen flats are currently occupied, with the government planning to build the next batch of 400 by the end of 2018.[40]

The government has also taken the lead in building a retirement community that provides affordable housing and integrated services for older adults. As baby boomers started to turn 65 in 2012, the HDB began to build the country's first-

ever retirement community in an effort to support comfortable aging at home and in community. The project, known as Kampung Admiralty ("Kampung" means village in Malaysian and Admiralty is a neighborhood in Northern Singapore), opened in 2015.

Kampung Admiralty is self-contained, consisting of small apartments and comprehensive facilities that meet the various needs of older adults. It includes 104 studios and flexi-flats of either 36 or 45 square meters. All apartments are equipped with age-friendly features, such as grab bars and vinyl floors to prevent slipping.[41] These small units are offered at affordable prices— SDG 91,000 to SDG 115,000 (USD 66,000 to USD 83,600) for a 30-year lease.[42] Older residents have access to various facilities in the community, including a two-floor medical center and a food court, that meet their daily living needs, as well as rooftop vegetable farms and community gardens that provide opportunity for daily activities. There is even a childcare center that assists older adults in taking care of

grandchildren— in Singapore, it is common for older adults to look after grandchildren during weekdays when the children's parents are at work.

The relative affordability and age-friendly designs have made this community extremely popular among older adults, and the government is working to expand this model. All but one unit of Kampung Admiralty were sold in the months immediately following the apartments entering the market. Experts also speak highly of this project. "[Kampung Admiralty] is a trailblazer as it allows for the integration of different services to satisfy older adults' needs within a community, not just for housing but also for health and social well-being," said Professor Yuen.[43] Given the positive feedback from residents who have moved into Kampung Admiralty, the government is considering deploying the model in the country's other regions.

Physical Infrastructure

Singapore is a global leader in infrastructure development, and the government has continuously worked to ensure safety and accessibility in transportation and the built environment for older adults. While mandates and subsidies have been the primary tools to promote improvements, technology is also playing a growing role.

Singapore has the world's best transportation infrastructure, which is relatively accessible for older adults and people with disabilities. The country topped the ranking of transportation infrastructure on the World Economic Forum's Global Competitiveness Index 2017-2018.[44] As of 2017, all Mass Rapid Transit (MRT) trains were wheelchair-accessible, and 80 percent of train stations were equipped with at least two barrier-free access routes.[45] More than 80 percent of the buses were wheelchair-accessible and 95 percent of bus stops were barrier-free as well.[46]

The high-level of accessibility in public transportation is the result of the government's heavy investment to upgrade existing transportation infrastructure, together with established and well-enforced mandates on new vehicles and facilities. Since 2006, the Land Transportation Authority (LTA) has mandated that all new public buses registered in Singapore be wheelchair-accessible.[47] In 2018, LTA replaced the entire MRT fleet, with all 57 new trains currently equipped with priority seats for the use of older adults and people with disabilities.[48] The government has also invested in existing facilities. Since 2008, LTA has set aside a fund of SDG 60 million (USD 44 million) under the Barrier Free Accessibility program to retrofit public transport facilities such as the MRT and bus stops.[49]

What really makes Singapore stand out is the integration of technology into its transportation facilities to ensure the safety of older adults. One innovative example is its Green Man Plus program. Pedestrians

age 60 and older accounted for 20 percent of road crash fatalities in 2016.[50] To improve safety for older pedestrians, LTA launched Green Man Plus in 2009, utilizing technology to allow extra time for older adults to cross streets. Electronic card readers installed at crossings identify older adults when they swipe their transport concession cards, then automatically extend the time of crossing lights.[51] The extra times range from three to 13 seconds depending on the size of the crossing.[52] By 2014, nearly 46,000 senior concession cards with the Green Man Plus function had been issued each year, with the frequency of usage reaching as high as 50 times each day at busy crossings.[53] The government is aiming to by the end of 2018 double the number of crossings installed with Green Man Plus traffic lights to 1,000—which will account for more than 20 percent of all traffic lights in the country.[54]

Singapore has also witnessed significant improvement in accessibility in the built environment. As of 2012, all public housing buildings and government buildings were barrier-free.[55,56] More than 90 percent of private buildings along Orchard Road, the busiest commercial road in Singapore, were barrier-free accessible in 2016, more than double the 41 percent in 2006.[57]

The improvement is largely due to the government's continued efforts to regulate accessibility of new buildings through mandates and to promote retrofits of existing buildings through subsidies. In 2007, Singapore legislated the Code of Accessibility in the Built Environment. While the 1990 Code on Barrier-Free Accessibility in Buildings was focused only on new buildings,[58] the 2007 code expanded the mandates into newly built public spaces, such as the connecting spaces between buildings and those between buildings and parks. It also raised the minimum standards, for example by increasing the mandated number of foldable grab bars in restrooms and adding new requirements for the installation of emergency call buttons in restrooms.[59] Additionally, the code required existing public housing and government buildings to comply with barrier-free standards.[60]

In addition to the mandates on both new and existing public buildings, the government has funded the upgrades of private buildings.[61] In 2007 it set up an Accessibility Fund of SGD 40 million (USD 29 million), which grants subsidies to cover up to 80 percent of the construction costs incurred by private building owners when installing barrier-free features.[62] The financial incentives have successfully prompted retrofits of private buildings— as of mid-2016, 135 projects were approved, receiving around SGD 14 million (USD 10.2 million) from the fund.[63]

Productive Opportunity
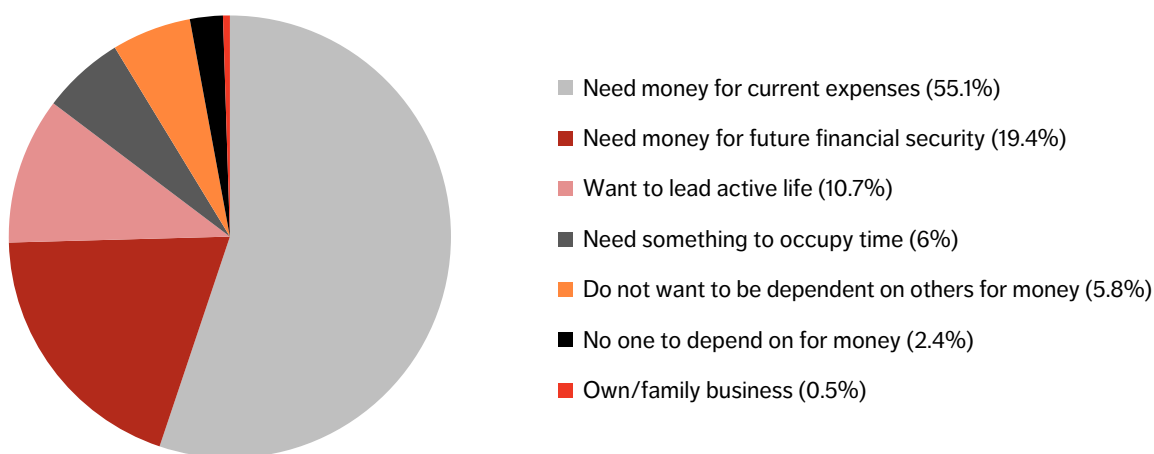
As the population aged and the traditionally defined working-age population dwindled, the growth of Singapore's labor force started to slow down in 2013 and further shifted into the negative in 2017.

As today's older adults are better educated, healthier, and living longer, the government is looking to this population as part of the labor force solution. Singapore is focusing on removing employer-side barriers to older adults remaining in the labor force by reforming the retirement system and fostering age-friendly workplaces. These efforts have helped older adults stay productively active, but skill gaps and ageism remain major challenges. While the government's escalated effort to promote later-life education can help address skill gaps, the elimination of ageism requires more fundamental, legislative movement.

Figure 4. Reasons for Working or Returning to Work, Age 55 and Older, 2011

- Need money for current expenses (55.1%)
- Need money for future financial security (19.4%)
- Want to lead active life (10.7%)
- Need something to occupy time (6%)
- Do not want to be dependent on others for money (5.8%)
- No one to depend on for money (2.4%)
- Own/family business (0.5%)

Source: Institute of Policy Studies 2011

Labor Force Participation

Older adults in Singapore are relatively active in the labor force. As of 2016, the labor force participation rate of people age 65 years and older was 26.5 percent,[64] nearly double the Organisation for Economic Co-operation and Development (OECD) average of 14.5 percent.[65] Financial necessity has been the primary reason for older adults to remain productively active.

According to the 2011 National Survey of Senior Citizens, the leading reason to work was "need money for current expenses," cited by 55 percent of respondents age 55 and older; "need money for future financial security" was second with 19 percent; and "want to lead an active life" was third with 11 percent (Figure 4).[66]

The financial status of older adults in Singapore today is asset rich and cash poor, primarily a result of the country's unique mandatory social security saving scheme, known as the Central Provident Fund (CPF). The CPF consists of three accounts to finance home ownership, retirement, and health care. Individuals, except those falling into certain personnel categories such as civil servant and armed forces, rely exclusively on defined contribution retirement funds accumulating in the individual accounts of the CPF.[67] The CPF mandates contributions from both employees and employers[68] and allows

individuals to withdraw from savings when they turn 55 years old as long as the savings balance meets the minimum amount.[69] Through the dedicated sub-account under the CPF, most people can afford to purchase houses, with support from government subsidies. As a result, older adults in Singapore tend to be asset rich. As of 2011, nearly 80 percent of people age 55 and older were either owners or co-owners of their residential property.[70]

However, older adults are relatively cash poor. An average CPF member after retirement is estimated to receive up to 70 percent of the pre-retirement income level from the CPF account.[71] However, the minimum balance requirement prevents CPF members— particularly low-income workers— from making withdrawals. As of 2011, this was the case for more than half of those age 55 and older, forcing them to rely on familial support and/or continuing to work.[72] In addition, the government's policy to encourage employers to hire older adults also unintentionally weakens an individual's ability to withdraw from the CPF. Beginning in 2012, the government lowered the CPF contribution rate for adults age 50 and older. The total contribution rates— shared by employers and employees— incrementally decreases by two percent to 24.5 percent of wages until the employees reach age 65.[73] The lower contribution rate was intended to improve the employability of older workers, but it further adds to the challenge for individuals to meet the minimum savings balance.

Despite the desire to work, older adults are facing a range of challenges in participating in the labor force, including ageism and a lack of relevant skills. According to the 2011 National Survey of Senior Citizens, 76 percent of respondents age 55 years and older reported having encountered ageism in certain forms.[74] Lack of relevant skills, particularly among those with low educational attainment, also disadvantages older adults in the job market. As of 2016, less than 40 percent of people age 60 and older had attained secondary education or above, while the percentage of those ages 50 to 59 and 35 to 49 were 65 percent and 88 percent, respectively.[75]

Retirement System Reform

Because of the shrinking labor force supply, the Singaporean government is seeking to capitalize on the untapped productive opportunity among older workers, with a focus on reforming the country's retirement system. After studying efforts made by other developed countries that enable people to work longer, it determined that merely raising the retirement age would not be the best approach, but rather, Japan's practice of legislating re-employment of older workers represented a more effective solution.[76] As such, in 2011 it introduced the Retirement and Re-employment Act (based on amendments to the previous Retirement Age Act), which went into effect in 2012.

Prior to the 2012 enactment of the Retirement and Re-Employment Act, the statutory minimum retirement age was age 62[77] while the contractual retirement age could be higher depending on the employer. As a result, employers in practice often dismissed older workers once they reached retirement age.[78] To enable people who are older than retirement age to remain in the labor market, the 2012 law requires companies to re-employ workers beyond the age of 62 and up to age 65, either at the same or a different position.[79] In July 2017 the age ceiling was further raised to 67. If employers cannot identify a suitable job for older workers, they are required to either transfer the re-employment obligation to another employer on the condition of consent of both the worker and the new employer or provide the worker with a one-off payment equivalent to 3.5 months' salary.[80] Older employees can choose to take the offer or leave. Specific re-employment terms are decided based on negotiation and consensus between employers and employees.

The collaborative model of tripartism has played an important role in promoting re-employment among employers and preparing them for the legislation. Initiated by the government, the Tripartite Committee on Employability of Older Workers (TriCom) was established in 2005, aiming to develop guidance to help employers retain, retrain, and recruit older workers. TriCom consists of representatives from the Ministry of Manpower, as well as with eight labor unions and employer

"TriCom creates opportunities for the government to listen to different perspectives, such as cost concerns by employers and payment fairness concerns by employees [which] help it to make effective decisions."

– WALTER THESEIRA, Associate Professor of Economics at Singapore University of Social Science

associations, to better inform decision making. "TriCom creates opportunities for the government to listen to different perspectives, such as cost concerns by employers and payment fairness concerns by employees [which] help it to make effective decisions," said Walter Theseira, Associate Professor of Economics at Singapore University of Social Science.[81]

Following the government's first announcement intending to introduce re-employment in 2007, TriCom released the Tripartite Advisory on the Re-employment of Older Workers in 2008. The document encouraged employers to retain people age 65 and older in the workforce and provided recommendations on how to negotiate contract arrangements with older workers.[82] Based on this feedback, TriCom later adapted and expanded the document into the Tripartite Guidelines on the Re-Employment of Older Employees in 2011 to prepare employers for the re-employment

legislation that came into force in 2012 and was updated in 2017.[83]

The reform has yielded early success but needs greater effort. Since its launch, more than 98 percent of private-sector local employees who wished to continue working beyond the age of 62 have been re-employed, either by the same or a different company. As of 2016, the labor force participation rate was 30 percent higher than the 2011 level.[84] Although the Act has been effective at retaining older workers, "when re-employed, older workers are usually put at a different job position, which are oftentimes paid less, or require low skills, due to skill gaps and ageism," said Amos Garcia, Research Associate at Milken Institute Asia Center based in Singapore.[85] Further progress in facilitating the productive engagement of older adults will require greater effort to improve their employability and eliminate ageism.

Age-Friendly Workplaces

Along with the promotion of re-employment, the government launched the WorkPro program, setting aside a fund of SGD 170 million (USD 124 million) to enhance work–life balance and promote age-friendly workplaces that facilitate older workers' longer stay in the labor force. The program was developed by the Ministry of Manpower in consultation with Singapore's two major trade unions— the National Trades Union Congress and the Singapore National Employer Federation.

The WorkPro program is focused on three areas and provides grants for each:[86]

- The Job Redesign Grant, under which an employer can apply for a grant up to SGD 300,000 (USD 218,000) to be used to create physically easier and safer jobs for workers age 50 and older

- The Age Management Grant, under which an employer can receive up to SGD 20,000 (USD 14,500) to be used to build competence in implementing age management practices and support this implementation

- The Work-Life Balance Grant, under which a company that offers flexible work arrangements can receive up to SGD 2,000 (USD 1,400) per year for two consecutive years for every local employee who regularly works under such an arrangement, with the total grant capped at SGD 70,000 (USD 51,000)

The program has shown encouraging results, particularly in terms of promoting flexible work arrangements. By the end of 2014, 1,500 companies had received grants from the program equivalent to 27 percent of the fund. As of 2016, 67 percent of employees in Singapore worked in firms that offer formal flexible work arrangements, up from 56 percent in 2011, and 82 percent of employees worked in firms that offer ad hoc flexible work arrangements, such as unplanned time off or telecommuting, an increase from 70 percent in 2013.[87]

Job Placement and Entrepreneur Assistance

While focusing on reforming the retirement system and creating age-friendly workplaces, the government has fallen short in support for older job seekers, with an absence of job placement programs dedicated to older adults or assistance in older entrepreneurship. "Current policies to promote older workers' employment are skewed toward employers rather than employees. With the tight market now, the key problem is job placement— how to get the right workers through a more efficient matching process," said Christopher Gee, Senior Research Fellow at the Institute of Policy Studies at National University of Singapore.[88] Helen Lim, founding partner and CEO of the social enterprise Silver Spring, agrees older workers still face obstacles. "The government currently doesn't have the capacity to help older entrepreneurs take off. They still need to know more about how to help older adults build sustainable business model,"[89] said Lim.

Silver Spring has emerged to fill that gap by focusing on matching older adults with job opportunities. Established by veteran human resources practitioner, Helen Lim, in 2009, Silver Spring matches retired professionals with jobs, utilizing a model that combines an online matching portal with offline career coaching.[90] Professionals can access information about job openings for full-time, part-time, and contract positions.

Job opportunities include managerial, accounting, security, and business analysis. Currently, 2,000 people age 40 and older are registered with Silver Spring. "Our focus is to enable older workers to rediscover their value and find fulfilling re-career options. I don't call them job seekers, and instead, I call them role seekers," said Lim.[92]

The Silver Spring business model relies on low overhead and service fees charged to employers when the job matching is successful. While Silver Spring is a pioneer and among the few players to assist older adults' job placement, employment services for this age group are drawing increasing attention. "I think there is still a lot to be done by intermediaries like us, and we have seen an emergence of efforts in this area to encourage employers to create more diversified [job] opportunities and a more inclusive workplace,"[93] said Lim.

Lifelong Learning

Relying on a knowledge-based development model due to limited natural resources, Singapore has long been promoting lifelong learning across its society, and is a world leader in this area. Since the government's introduction of Thinking Schools, Learning Nation in 1997, Singapore has endeavored to promote a national culture and social environment that values continuous learning throughout life.[94] To prepare for demographic change, the government has enhanced its efforts to provide later-life education, stressing that the benefits of

learning will increase older people's self-esteem, confidence, and ability to cope with stress and empower them to contribute to society. This includes the launch of a national lifelong learning initiative, known as SkillsFuture, and a network that provides learning opportunities for older adults.

The government launched SkillsFuture in 2015, driven by the recognition that in an era when technology advancement constantly disrupts business models and job markets, national competitiveness will require upskilling the workforce and fostering a lifelong learning culture. A major component of the initiative is SkillsFuture Credit program, under which the government offers subsidies for individual learning activities. As of 2016, all citizens age 25 and older receive SGD 500 (USD 363) of SkillsFuture Credit each year, which can be used to offset the cost of courses provided by universities and VWOs. The credit does not expire and can be carried over into the following year, enabling individuals to collect enough credits to pay for expensive courses.

The government has also focused on creating education opportunities specifically for older adults, in collaboration with post-secondary institutions. In 2015, it established the National Silver Academy (NSA), a network offering affordable short courses, exam-free modules, and ad hoc learning opportunities for older adults relevant to both the workplace (e.g., information technology, business) and life skills (e.g., health, wellness, arts). People

"The SkillsFuture program is a game changer and creates a platform that facilitates engagement of various stakeholders. As a result, the whole society is thinking about lifelong learning right now."

– CHRISTOPHER GEE, Senior Research Fellow at the Institute of Policy Studies at National University of Singapore

age 50 years and older can use SkillsFuture Credit to offset the fees of these courses, with additional government subsidies covering up to 50 percent of the remaining fees. Some 15,000 older adults have benefited from NSA courses since its launch in 2015.

The SkillsFuture initiative has greatly increased public awareness and engagement in lifelong learning across Singapore. "The SkillsFuture program is a game changer and creates a platform that facilitates engagement of various stakeholders. As a result, the whole society is thinking about lifelong learning right now, which has the potential to greatly improve the productive potential of future generations of older adults," said Christopher Gee, Senior Research Fellow at the Institute of Policy Studies at National University of Singapore.[95]

# Technological Engagement

Singapore has among the world's best-developed ICT infrastructure and is ranked first in the most recent World Economic Forum's Global Networked Readiness Index.[96]

The government seeks to use its ICT infrastructure to harness the power of technology and boost economic competitiveness while improving the well-being of Singapore's population. As such, the government has been working to promote the development of aging-related technology through funding and partnership with various stakeholders. However, interest from the private sector remains limited to health technology and startups.

Figure 5. Digital Technology Usage Age 60 Years and Older, 2013-2016
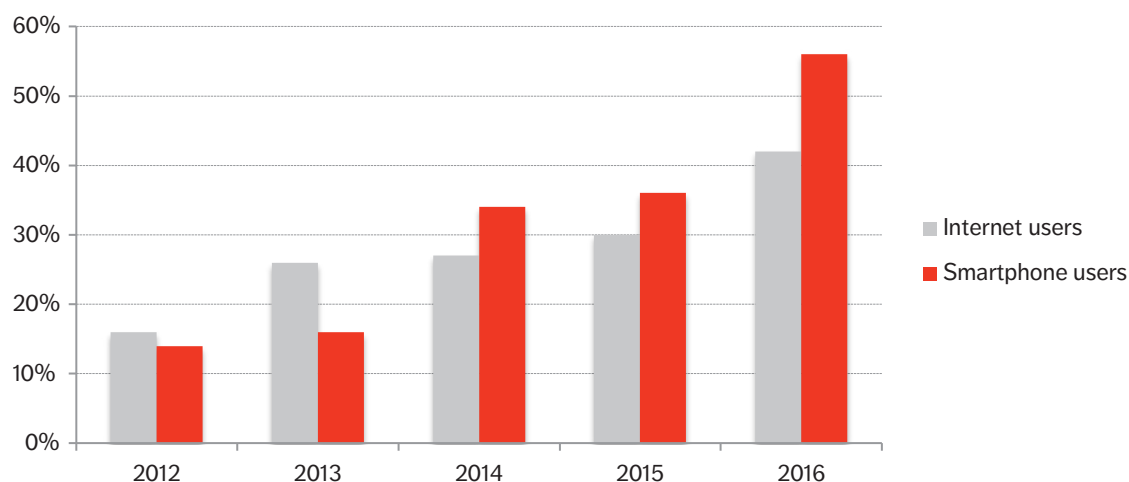
Legend: Internet users, Smartphone users

Digital Inclusion and Divide

The use of digital technology has increased significantly over the past few years among older people in Singapore, but remains considerably lower than that of the general population. Internet users as a percentage of people age 60 years and older nearly tripled from 16 percent in 2012[97] to 42 percent in 2016,[98] partly a result of the growing popularity of smartphones. Fifty-six percent of people age 60 years and older used a smartphone in 2016, quadrupled from 2012.[99] However, older adults lag behind the overall population— as of 2016, the percentage of people age 60 and above who were online was only half the level of the general population (Figure 5).[100]

Although the future older population is becoming increasingly digitally savvy, "[today's] older people in Singapore overall have low education attainment, so it became harder for them to adopt digital technology," said Christopher Gee, Senior Research Fellow at the Institute of Policy Studies at National University of Singapore.[101] As of 2016, fewer than 20 percent of people age 60 and older had attained secondary education or more, compared with 65 percent and 88 percent of those ages 50 to 59 and 35 to 49, respectively.[102]

To bridge the divide and promote digital skills, the government has mobilized VWOs and tech-savvy older adults to provide easily accessible training and technology assistance for their peers, exemplifying the government's support for aging in place. One innovation is the Silver Infocomm Junctions (SIJ). Launched by the government agency Infocomm and Media Development Authority in 2007, SIJ's goal is to establish a network of community-based digital learning hubs for people age 50 and older. These hubs are operated by VWOs and provide training tailored to older adults' digital literacy at the low cost of SGD 8 to 10 (USD 6 to 7.5) per hour.

Training is available in both basic digital skills such as how to use a computer, surf the internet, and create an email or instant messaging account, and more advanced skills such as making transactions online, editing digital photos, and sharing large files online. As of the end of 2015, close to 80,000 training sessions had been carried out through workshops conducted at these SIJs.[103] "By customizing the course to an older adult's context, we are able to ensure they can apply what they've learned to their daily lives such as using government service apps, navigating transportation, and using messaging apps to connect with their families,"[104] said Meng Fong, Executive Director at RSVP Singapore, a VWO participating in the SIJ.

Private-Sector Engagement

The silver economy in Singapore is growing rapidly, with the market size of products and services targeting people age 50 and older projected to nearly triple from SGD 33 billion (USD 24 billion) in 2015 to SGD 91 billion (USD 66 billion) in 2025.[105] Beyond health technology, however, private-sector engagement remains relatively limited, primarily driven by startups, which often face funding and commercialization challenges.

Singapore is a host to both world-leading multinationals and startups focused on health technology in the Asia-Pacific region. Today, more than 60 multinational health-tech companies have set up regional headquarters or undertaken manufacturing or research and development (R&D) activities in Singapore, including Siemens Medical Instruments, Baxter International, and Royal Philips.[106] Meanwhile, Singapore is the third largest base for health-tech startups in Asia, accounting for 11 percent in 2017, following India at 33 percent and China at 31 percent.[107] Singapore's attractiveness is primarily due to its ease of doing business, as the country ranked second on the World Bank's Doing Business Index in 2017, holding sixth place in terms of ease of starting a business.[108] In addition, Jean-Luc Butel, President and Global Healthcare Advisor of the health care consultancy firm K8 Global, suggested that the city's small market also makes it a good place for model testing.[109]

Interest in the older market beyond health technology, however, is relatively limited and mainly driven by startups. As Butel commented, "while most of the projects [related to older-age tech] are done by startups, it's hard to find the right risk capital to take these companies and scale them up commercially. I don't see a lot of interest from private capital chasing startups."[110]

"The awareness of big corporations towards aging population might be lower than you expected [in Singapore], compared with other advanced economies like Japan,"[111] said Wong Poh Kam, Director of Entrepreneurship Centre at National University of Singapore.

Government Push for Older-Age Tech Development

While the private sector has been slow to cater to the growing market of older consumers, the government has been working keenly to promote the development of the older-age tech sector, incorporating it into the economic competitiveness strategy. Its primary efforts are in supporting technology commercialization and providing funding.

To boost the country's economic competitiveness in the digital era, the government launched the national digital strategy known as Smart Nation Plan. As the Plan states, it is aimed at building a country "where people live meaningful and fulfilled lives, enabled seamlessly by technology, offering exciting opportunities for all."[112] Started in 2014, the government has thus far allocated SGD 4.8 billion (USD 3.5 billion) to fund national digital infrastructure, data analytics and digital citizen systems, and cyber security programs.[113] The plan highlights the importance of harnessing the power of technology to support older adults' independent living and to improve their life quality. As such, the government has focused on providing support for technology commercialization through the SHINESeniors program.

SHINESeniors, or Smart Homes and Intelligent Neighbors to Enable Seniors, is an R&D project built on an industry–university partnership with funding support from the government. The partnership, known as iCity Lab, is a joint initiative between an IT company, Tata Consultancy Services, and Singapore Management University, launched in 2011 to focus on IT solutions for a smart city.[114] In 2014, iCity Lab introduced the SHINESeniors project, aiming to develop an integrated home system that enables aging in place, consisting of non-intrusive sensors that detect motions and monitor medical conditions, as well as function buttons that facilitate communication with care providers.[115]

The government is supporting this project in multiple ways. In addition to funding, it facilitates partnerships with care providers. It has also provided testing opportunities for the technology by installing it in 100 public housing apartments free of charge as of June 2018. According to Tan Pink Hwee,

Academic Director of the TCS-SMU iCity Lab at Singapore Management University, based on the positive feedback from older adults, the testing will be expanded to another 300 public housing apartments, and after the trial, the government plans to promote the technology through a means-tested, co-pay model.[116]

In light of the funding challenge faced by startups, the government has also sought to fill the gap by providing seed funding. One example is Modern Aging, an incubator program aimed at identifying, developing, and scaling up startups that focus on products and services to meet the needs of older adults.[117] The program was initiated in 2015 by ACCESS Health, a U.S. advocacy group focused on inclusive health care, and NUS Enterprise, an education division of National University of Singapore.[118] Each stakeholder plays a key role— the government offers seed funding, NUS Enterprise provides mentorship on business development, and ACCESS matches startups with corporate partners to help them take off.[119]

Every year, Modern Aging solicits business ideas from startups and has a team of industry experts select 10 winners based on their potential impact. The winners participate in an intensive 10-week-long Lean LaunchPad business development program. At the end of the program, participant startups develop their business models and pitch them to an audience of investors and corporations during the finale. The most promising teams each receive

"The incubation program has created a network that brings stakeholders, such as service providers and young entrepreneurs, together to exchange ideas and promote better understandings of aging issues."

– WONG POH KAM, Director of Entrepreneurship Centre, National University of Singapore

seed funding of up to SGD 50,000 (USD 36,300).[120]

As of 2017, Modern Aging had received close to 200 business ideas and awarded a total of SGD 225,000 (USD 163,350) to five of them, ranging from an electronic medication-dispensing machine to an emergency monitoring system.[121] "The incubation program has created a network that brings stakeholders, such as service providers and young entrepreneurs, together to exchange ideas and promote better understandings of aging issues," said Wong Poh Kam, Director of Entrepreneurship Centre, National University of Singapore.[122]

Health Care and Wellness

People in Singapore are among the healthiest in the world, claiming fourth for life expectancy and number one for healthy life expectancy.[1][2][3]

While the country is known for its efficient health care system, the aging population has put strains on its medical capacity and requires a robust long-term care system to complement the traditional family caregiving. As the government endeavors to adapt the social services system to meet rising demand, innovative care delivery models are emerging out of non-governmental sectors.

The Health Status and Health Care System

Older adults continue to live longer and healthier, although chronic and mental diseases represent major health risks for older adults. Over the period spanning 2000 to 2016, life expectancy of people age 60 and above grew by 16 percent to 25 years and their healthy life expectancy by 20 percent to 21 years, while the gap between lifespan and healthspan remained unchanged.[124] Nevertheless, like in other countries, chronic diseases are prevalent among older adults. More than 60 percent of adults age 55 years and older claim to have at least one disease, with chronic diseases including high blood pressure, high blood cholesterol, diabetes, and arthritis among the most common.[125] Dementia is also an emerging risk— as of 2015, the prevalence of dementia among people age 60 and above was 10 percent in Singapore, twice the global average.[126] According to Peh Kim Choo, CEO of the Tsao Foundation, "the trend has raised concern in recent years. It is associated with the rapidly aging population, and an increasing prevalence of other risk factors such as diabetes. Together with depression, they are also closely linked to the mental health of older people."[127]

Supporting Singapore's relatively healthy population is a health care system anchored in heavy regulation of the provision and pricing of medical care, as well as a financing system that emphasizes individual contributions. Singapore's health care system is often referred to as among the world's most efficient systems for its ability to achieve excellent health outcomes with relatively low expenditures. As of 2015, Singapore's total health expenditure accounted for 4.3 percent of gross domestic product, lower than any OECD country, notably less than half the level of Japan.[128] Despite this high efficiency, affordability and capacity shortages can inhibit older adults' access to health care.

The government's ability to ensure access to low-cost, high-quality medical care is enabled through a combination of public ownership, market competition, government subsidies, and publicly financed health care funds. Eighty percent of hospitalization care in Singapore is provided by publicly owned institutions, facilitating the government's control of medical care costs through drug prices and equipment procurement.[129]

The government encourages public hospitals to compete with each other, as well as with private hospitals, in operations efficiency and service quality and pricing.[130] In addition, the government sets a list of drugs that are eligible for subsidized prices at public health care institutions and patients' purchases through publicly financed health care funds (i.e., Medisave and Medishield), and only drugs considered as cost effective are included, driving down overall drug costs.[131]

Echoing its other social benefits policies, Singapore has designed a financing scheme for health care that emphasizes individual responsibility. Workers are required to pay

into a medical savings account, known as Medisave, with a matching contribution from employers. Account holders or their family members can use the fund for routine care— including hospitalization and certain outpatient services. All citizens are also automatically enrolled in MediShield Life,[132] a low-cost and basic health insurance, and use it for catastrophic hospital costs.[133,134] In addition, co-payment by patients is an integral feature of the financing scheme as a disincentive to the unnecessary use of health care services.[135]

While the system offers universal health coverage, affordability— due to high out-of-pocket payment, particularly co-payment— remains a challenge for older adults. "The co-pay of individuals is still very high in Singapore [and] it is a bit of a stretch for the poor population,"[136] said Jonathan Tan, Director of Asia Pacific Risk Center at Marsh & McLennan. According to a 2014 HSBC's study on the Future of Retirement, more than half of the respondents cited "not having enough money to provide for good health care provision" as their top fear about retirement, following poor health and financial hardships.[137]

The government has attempted to improve affordability by subsidizing vulnerable groups, including subsidies provided through the Community Health Assist Scheme for lower-to-middle-income households[138] and the Pioneer Generation Package for older adults born before 1949.[139] While the subsidies have helped reduce the financial burden on individuals, people in Singapore on average still bear

a significantly higher share of health care expenditures than peers in other high-income countries. While out-of-pocket expenditure in Singapore dropped from 50 percent of the total health care expenditure in 2005 to 37 percent as of 2015, it was still 2.5 times as high as the OECD average and exceeds all OECD countries except Latvia, Mexico, and Korea.[140]

In addition to affordability, health system capacity is an increasing challenge as the population ages— both in terms of physical infrastructure and workforce. As of 2014, there was a shortfall of 3,904 hospital beds. Although the government has been working to increase hospital beds, the shortage is projected to range between 1,325 and 2,525 by 2030.[141] The shortfall in health care workers is an even greater challenge— it is projected to reach 30,000 by 2020.[142] This tight supply inhibits older adults' access to quality health care in a timely manner.

Long-Term Care

The aging population is also driving demand for long-term care (LTC). The number of people age 60 and older who have an active daily living limitation is expected to reach 83,000 by 2030 in Singapore, up by 160 percent from the 2010 level.[143] In response, the government has stepped up efforts to develop the LTC system, with a focus on availability and affordability. Despite significant progress, more work is needed to strengthen financial protection for older

adults and their families and to promote care integration.

Realizing that the traditional source of family members cannot sufficiently meet the growing need for care for older adults, the government has expanded professional LTC capacity, particularly in community-based care, including center-based care and home care. Since 2011, the number of home care and day care facilities has more than doubled, reaching 8,000 and 5,000, respectively,[144] while the number of nursing home beds has increased by 56 percent to 13,700.[145]

The government's main strategy to build up LTC capacity again leverages the national network of VWOs. In 2000, the government set up an eldercare endowment fund, using the interest from the fund to subsidize operations of VWOs that provide LTC services ranging from nursing homes to day rehabilitation and to home medical and nursing care.[146] With an initial fund of SGD 200 million (USD 146 million), the government continues to inject capital in years when fiscal budget has surpluses. As of 2015, the endowment stood at SGD 3 billion (USD 2.2 billion).[147]

While effective, the limitation of funding support toward VWOs has discouraged private-sector engagement— particularly in community-based care— potentially undermining the LTC system's ability to meet growing demand. As of 2014, among the 135 community-based care providers, only 12 (less than 10 percent) were private providers,[148] while "community

services remain quite patchy," said Ng Wai Chong, Chief of Clinical Affairs at Tsao Foundation.[149]

The government has just started to address this unevenness. According to Jit Seng Tan, Director of Lotus Eldercare, a private LTC care provider, the government has engaged private providers like Lotus Eldercare in discussions to seek potential solutions.[150]

Affordability is another focus area of the government. A normal nursing home cost per month, exclusive of consumables, ranges from SGD 2,000 (USD 1,500) to SGD 3,000 (USD 2,200),[151] accounting for one-fifth to one-third of a median household income level, or SGD 9,023 (USD 6,600) as of 2017.[152] To support an older adult with complicated medical conditions to live at home, the cost for paying integrated home and day care services is up to SGD 2,200 (USD 1,600) per month,[153] or nearly one-fourth of the income of a median household. To enhance the ability of older adults and their families to finance LTC, the government has focused on subsidizing care recipients through providers and promoting an LTC insurance scheme (i.e., ElderShield), although more effort is needed.

The government provides means-tested subsidies for eligible individuals, covering 20 to 75 percent of residential services and 30 to 80 percent of community-based services, depending on household per capita income levels.[154] While the government aims to cover low- and middle-income households and claims that up to two-thirds of households are qualified for the subsidy,

because it is based on per capita rather than household income, some parties in need are excluded. For example, a three-member household that has a total monthly income at SGD 8,000 (USD 5,800) falls below the median household income,[155] but because the household income per capita is SGD 2,666 (USD 1,900), above the threshold of SGD 2,600 (USD 1,900) as of October 2017, the older adult(s) in this household would not quality for the subsidy.

Besides the means-tested subsidy, Singapore has promoted an insurance scheme, known as ElderShield, aimed at providing basic financial protection for older adults with severe disabilities.[156] People who have Medisave accounts are automatically enrolled in ElderShield when they turn 40 years old, although they can choose to opt out.[157] Since its introduction in 2002, the opt-out rate has dropped from more than 30 percent to five percent as of 2016.[158] By paying annual insurance premiums between the ages of 40 and 65,[159] individuals age 65 and above with severe disabilities are eligible to receive monthly payouts— either SGD 300 (USD 218) for 60 months or SGD 400 (USD 291) for 72 months.[160] However, the payout can be insufficient for families that are not eligible for subsidies. Again, take the example of a three-member household that has a total income at SGD 8,000 (USD 5,800). Not qualifying for subsidies, this household could spend one-third of the income on nursing home bills.

To better prepare the future cohort of older adults for the cost of LTC, the government is considering making the insurance compulsory and requiring the payment of premium at a younger age, although no timeframe is set.[161] "[By doing so,] the premium would be more affordable and (older adults) could expect more payouts in the long run; and the mandatory nature would also expand the coverage of seniors," said Walter Theseira, Associate Professor of Economics at Singapore University of Social Science.[162]

While the government has focused on improving availability and affordability of LTC services, gaps remain in supporting family caregivers and providing integrated, quality care. Given older adults' traditional reliance on family members for care, the government provides family caregivers with some, albeit limited, support. According to the 2011 National Survey of Senior Citizens, 20 percent of people age 55 years and above need a caregiver, and among them, 76.6 percent are mainly supported by family members.[163] The government's primary support for family caregivers is the provision of a caregiving training subsidy and the hiring of foreign domestic workers.[164] However, benefits such as paid leave and tax credits that are provided in many developed countries are absent in Singapore.

In addition, integration between medical and social care and between residential and community-based care is needed to ensure older adults' easy access to appropriate services. "The [care] delivery system has seen improvements, but overall it is still very fragmented and requires integration," said Normala Manap, Senior Associate

Director at Centre for Ageing Research and Education at Duke-NUS Graduate Medical School.[165]

An innovative, early effort to help older adults easily access care when needed is Jaga-Me, a mobile App that matches demand for home-based medical and social care with providers. Launched in 2015 by a startup, the app connects homebound patients with nearby licensed doctors, nurses, and professional caregivers, covering services ranging from a health assessment and consultation to minor surgical procedures and from hygiene services to hospital escort. The technology greatly improves the ease of accessing care for older adults and their families. Upon request through Jaga-Me, a care provider can be dispatched to a customer within two hours. The service charges SGD 21 (USD 15) to SGD 26 (USD 19) per hour for social caregivers and SGD 80 (USD 58) to SGD 250 (USD 182) for a visit by doctors or nurses.[166]

In addition to facilitating the provision of integrated care at home, Jaga-Me also presents a potential solution to optimizing the utilization of care capacity. So far, the company has served more than a thousand patients through its network of hundreds of professional individual providers.[167] "Since we cannot double the care capacity within a short term to meet the increasing demand driven by the aging population, the capacity building needs to be complemented with innovation," said Julian Koo, Co-Founder of Jaga-Me.

"Since we cannot double the care capacity within a short term to meet the increasing demand driven by the aging population, the capacity building needs to be complemented with innovation."

– JULIAN KOO, Co-Founder of Jaga-Me

An Innovative Community-Based Model— ComSA

While Jaga-Me is developing a virtual service platform, another innovative model of physical service hub has emerged out of a pilot project known as the Community for Successful Ageing (ComSA). The project was launched by the Tsao Foundation in 2015 in Whampoa, a neighborhood with more than a third of its residents age 50 years and over. "ComSa follows a community-wide approach to forge an integrated system of comprehensive programs and services with the aim to promote health and well-being over the life course and to enable aging in place," said Peh Kim Choo, CEO of Tsao Foundation.[168]

As such, a variety of services are provided in the community to meet a continuum of needs along the life course for healthy,

frail, and dying older adults, ranging from health prevention to end-of-life care and from community engagement to care management.[169] Led by Tsao Foundation, the model is built on collaboration with diverse stakeholders and community partners—including NGOs, businesses, academia, and individuals— in terms of funding, care provision, and technology development.

The state-owned gaming company Tote Board, together with Tsao Foundation, provided a fund of SGD 5 million (USD 3.6 million) for the project. While Tsao Foundation established and operates care facilities within the community, including a medical home, a day care center, and a mobile clinic, it also cooperates with hospitals nearby to follow up with older patients after their hospital visits.

Tsao Foundation has partnered with National University of Singapore to develop software used at its facilities for health screening. Volunteers are mobilized to serve as care managers who identify older adults at high health risk, monitor their health status, and connect them with care providers. In addition, older adults are empowered by participating in diverse courses to develop self-care capability and contributing ideas for community development. While assessment of ComSA's first phase is still in process, within the first year alone, its services benefited more than 15 percent of older residents in the community.[170]

Endnotes

1   The World Bank. (2017). GDP per capita, PPP (current international $). Retrieved from https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD?year_high_desc=true

2   United Nations, Department of Economic and Social Affairs, Population Division. (2017). World Population Prospects: The 2017 Revision, custom data acquired via website. Accessed September 6, 2018.

3   Singapore Statistics. (2018). Births and Fertility. Retrieved from http://www.tablebuilder.singstat.gov.sg/publicfacing/createDataTable.action?refId=13273

4   Haque, M. (2009). Public Administration and Public Governance in Singapore. Retrieved from http://profile.nus.edu.sg/fass/polhaque/s-haque-singapore.pdf

5   Yong, S. (2013). Singapore's Housing Policies: 1960-2013. Retrieved from http://ink.library.smu.edu.sg/soe_research/1544/

6   The World Bank. (2018). "But what about Singapore?" Lessons from the best public housing program in the world. Retrieved from http://blogs.worldbank.org/sustainablecities/what-about-singapore-lessons-best-public-housing-program-world

7   Interview with Debbie Loo, former Adjunct Lecturer at Singapore Polytechnic. January 2018.

8   The World Bank. (2018). Worldwide government indicators. Retrieved from http://info.worldbank.org/governance/wgi/#reports

9   Haque, M. (2009). Public Administration and Public Governance in Singapore. Retrieved from http://profile.nus.edu.sg/fass/polhaque/s-haque-singapore.pdf

10   Hendrie, D. (2015). In praise of technology: why Australia must imitate Singapore. Retrieved from https://pursuit.unimelb.edu.au/articles/in-praise-of-technocracy-why-australia-must-imitate-singapore

11   International Labour Office. (2010). ILO Study Mission on Singapore's Tripartism Framework. Retrieved from http://www.ilo.org/wcmsp5/groups/public/@ed_norm/@normes/documents/missionreport/wcms_127691.pdf

12   Ministry of Social and Family Development. (1999). Inter-Ministerial Committee (IMC) Report on the Ageing Population, 1999. Retrieved from https://www.msf.gov.sg/publications/Pages/Inter-Ministerial-Committee-(IMC)-Report-on-the-Ageing-Population-1999.aspx

13   Ibid.

14   Ministry of Social and Family Development. (2018). Voluntary Welfare Organisations. Retrieved from https://www.msf.gov.sg/policies/Voluntary-Welfare-Organisations/Pages/default.aspx

15   Interview with Melissa Khoo, Group Director in the Ministry of Health Ageing Planning Office. February 2018.

16   Ministry of Social and Family Development. (2018). Voluntary Welfare Organisations. Retrieved from https://www.msf.gov.sg/policies/Voluntary-Welfare-Organisations/Pages/VWOs-funded-in-FY10-and-FY11.aspx

17   Interview with Tan Ern Ser, Associate Professor of Sociology at National University of Singapore. February 2018.

18   Ministry of Social and Family Development. (1999). Inter-Ministerial Committee (IMC) Report on the Ageing Population, 1999. Retrieved from https://www.msf.gov.sg/publications/Pages/Inter-Ministerial-Committee-(IMC)-Report-on-the-Ageing-Population-1999.aspx

19   Ministry of Health. (2016). I feel young in my Singapore. Retrieved from https://www.moh.gov.sg/content/dam/moh_web/SuccessfulAgeing/action-plan.pdf

20   Government data. (2010). Singapore Residents By Age Group, Ethnic Group And Gender, End June, Annual. Retrieved from https://data.gov.sg/dataset/resident-population-by-ethnicity-gender-and-age-group

21   Institute of Policy Studies. (2011). National Survey of Senior Citizens 2011. Retrieved from https://www.duke-nus.edu.sg/care/wp-content/uploads/National-Survey-of-Senior-Citizens-2011.pdf

22   The Ministry of Social and Family Development. (2015). Ageing Families in Singapore. Retrieved from https://www.msf.gov.sg/research-and-data/Research-and-Data-Series/Documents/Ageing%20Families%20Report%20Insight%20Series%2020151124.pdf

23   Channels News Asia. (2012). Ageing in institutions: choices and challenges. Retrieved from https://www.channelnewsasia.com/news/singapore/ageing-in-institutions-choices-and-challenges-7709112

24   Department of Statistics Singapore. (2018). Retrieved from: http://www.tablebuilder.singstat.gov.sg/publicfacing/createDataTable.action?refId=14913 Accessed Sept. 9. 2018

25   Interview with Thang Leng Leng, Deputy Director of the Centre for Family and Population Research at National University of Singapore. May 2018.

26   Department of Statistics, Singapore (2017), Elderly Youth and Gender Profile. https://data.gov.sg/dataset/resident-households-by-age-group-of-head-and-household-living-arrangement-annual?view_id=4219d42a-6cda-4059-93f0-3ca18914ffee&resource_id=8afe1e60-cc0e-4298-9e16-b46253036330

27   The Ministry of Social and Family Development. (1995). The Maintenance of Parents Act. Retrieved from https://www.msf.gov.sg/policies/Helping-the-Needy-and-Vulnerable/Supporting-Vulnerable-Elderly/Seeking-Maintenance-from-Children/Pages/The-Maintenance-of-Parents-Act.aspx

28   Institute of Policy Studies. (2011). National Survey of Senior Citizens 2011. Retrieved from https://www.duke-nus.edu.sg/care/wp-content/uploads/National-Survey-of-Senior-Citizens-2011.pdf

29   Government data. (2018). Resident Households By Type Of Dwelling, Annual. Retrieved from https://data.gov.sg/dataset/resident-households-by-type-of-dwelling-annual?resource_id=54ad26a7-1ff4-453a-a2cd-39ce64c6aaa8

30   Today Online. (2017). Govt to expand, consolidate social and health-related services for seniors under Ministry of Health. Retrieved from https://www.todayonline.com/singapore/govt-expand-consolidate-social-and-health-related-services-seniors-under-ministry-health

31   Silver Pages. (2018). The help seniors get. Retrieved from https://www.silverpages.sg/sites/silverpagesassets/SilverPages%20Assets/Publications%20(NextStep)/NextStep%20Images/2017%20Issue%203/In%20Focus%20Illust.JPG

32   Interview with Ng Wai Chong, Chief of Clinical Affairs at Tsao Foundation. June 2018.

33   Ministry of Health. (2015). Integration of health and social services to support seniors. Retrieved from https://www.moh.gov.sg/content/moh_web/home/pressRoom/pressRoomItemRelease/2018/integration-of-health-and-social-services-to-support-seniors.html

34   Interview with Debbie Loo, former Adjunct Lecturer at Singapore Polytechnic. January 2018.

35   Singapore Government. (1998). Speech by Mr. Lim HNG Kiang, Minister for National Development at the Launch Ceremony of the Exhibition on Studio Apartments for the Elderly on Wednesday, 25 March 1998 at 7:30 pm at Bedok North Street 3. Retrieved from http://www.nas.gov.sg/archivesonline/speeches/view-html?filename=1998032502.htm http://www.asiaone.com/singapore/move-studio-flats-pays-seniors

36   Lin, M. (2014). Move to studio flats pays off for seniors. Retrieved from http://www.asiaone.com/singapore/move-studio-flats-pays-seniors

37   Interview with Belinda Yuen, Research Director of Lee Kuan Yew Centre for Innovative Cities at Singapore University of Technology and Design. May 2018.

38   Interview with Thang Leng Leng, Deputy Director of the Centre for Family and Population Research at National University of Singapore. May 2018.

39   99.co. (2017). 3 things to consider before saying "yes" to a 3Gen HDB flat. Retrieved from: https://www.99.co/blog/singapore/3-things-3gen-hdb/

40   Housing and Development Board. (2016). Types of flats. Retrieved from http://www.hdb.gov.sg/cs/infoweb/residential/buying-a-flat/resale/types-of-flats

41   Research Global Markets. (2018). Singapore integrated developments. Retrieved from https://www.researchonglobalmarkets.com/hdb-kampung-admiralty-integrated-development-singapore-project-profile-69568.html

42   Ibid

43   Interview with Belinda Yuen, Research Director of Lee Kuan Yew Centre for Innovative Cities at Singapore University of Technology and Design. May 2018.

44   World economic forum. (2017). 2nd pillar: infrastructure. Retrieved from http://reports.weforum.org/global-competitiveness-index-2017-2018/competitiveness-rankings/#series=GCI.A.02

45   The Ministry of Transport. (2016). Accessibility. Retrieved from https://www.mot.gov.sg/about-mot/land-transport/accessibility

46   Land Transport Authority. (2017). Enhancing Physical Accessibility for All. Retrieved from https://www.lta.gov.sg/content/ltaweb/en/public-transport/system-design/enhancing-physical-accessibility-for-all.html

47   The Ministry of Transport. (2016). Accessibility. Retrieved from https://www.mot.gov.sg/about-mot/land-transport/accessibility

48   Channel News Asia. (2018). Tip up seats on new MRT trains increase standing space. Retrieved from https://www.channelnewsasia.com/news/singapore/mrt-trains-new-seats-nsewl-tip-up-standing-space-9998204

49   Land Transport Authority. (2011). LTA Completes Barrier Free Accessibility Enhancement. Retrieved from https://www.lta.gov.sg/apps/news/page.aspx?c=2&id=fhe49qx0oko4182ejjsq9e0c7vp19ywqtb7u7xw91e3d8x33rh

50   The Traffic Police. (2016). Annual Road Traffic Situation. Retrieved from https://www.police.gov.sg/~/media/spf/files/statistics/20170215_stats_road_traffic_situation_2016.pdf;

51   Singapore Aviation. (2010). Singapore Aviation Accident/Incident Reporting System. Retrieved from https://www.mot.gov.sg/DATA/0/docs/Annex%20B%20-Write-Ups%20of%20Initiatives.pdf

52   One Motoring. (2014). Green Man +. Retrieved from https://www.onemotoring.com.sg/content/onemotoring/en/on_the_roads/traffic_management/green_man_plus.html

53   Channel News Asia. (2015). Jurong, Marine Parade and Chinatown to get Green Man Plus pedestrian crossings. Retrieved from https://www.channelnewsasia.com/news/singapore/jurong-marine-parade-and-chinatown-to-get-green-man-plus-pedestr-8265484

54   Ministerial Committee on Ageing. (2018). Action Plan for Successful Ageing: I feel young in my Singapore! Retrieved from https://sustainabledevelopment.un.org/content/documents/16269Action_Plan_for_Successful_Aging.pdf

55   United Nations. (2016). Good Practices of Accessible Urban Environment. Retrieved from http://www.un.org/disabilities/documents/desa/good_practices_in_accessible_urban_development_october2016.pdf

56   Channel News Asia. (2012). All Public Housing Estates Now Have Barrier-Free Accessibility. Retrieved from: https://www.channelnewsasia.com/news/singapore/all-public-housing-estates-now-have-barrier-free-accessibility-8378438

57   United Nations. (2016). Good Practices of Accessible Urban Environment. Retrieved from http://www.un.org/disabilities/documents/desa/good_practices_in_accessible_urban_development_october2016.pdf

58   National Library Board. (1990). Code on Barrier-Free Accessibility in Building. Retrieved from http://eservice.nlb.gov.sg/data2/BookSG/publish/b/ba7ff8bd-445e-411a-aa69-c82a0a6353ad/web/html5/index.html?opf=tablet/BOOKSG.xml&launchlogo=tablet/BOOKSG_BrandingLogo_.png

59   Tsao Foundation. (1986). Dimensions of Aging in Singapore. Retrieved from https://tsaofoundation.org/doc/dimensions_aging.pdf

60   Housing and Development Board (2016). Towards a barrier-free environment. Retrieved from https://www.bca.gov.sg/BarrierFree/others/HDB.pdf

61   Today Online. (2017). Barrier free accessibility upgrades. Retrieved from https://www.todayonline.com/singapore/barrier-free-accessibility-upgrades-existing-buildings-requirement-next-year

62   Built and Construction Authority. (2017). The Accessibility Fund. Retrieved from https://www.bca.gov.sg/BarrierFree/others/Accessibility%20Fund%20Brochure_2017_WEB.pdf

63   Building and Construction Authority. (2016). BCA to Expand Accessibility Mandatory Requirements for Existing Buildings. Retrieved from: https://www.bca.gov.sg/newsroom/others/SUDW_Media_Release_270716.pdf

64   ILO database. Accessed February 3, 2018.

65   OECD database. (2018). LFS by sex and age – indicators. Retrieved from https://stats.oecd.org/Index.aspx?DataSetCode=LFS_SEXAGE_I_R#

66   Institute of Policy Studies. (2011). National Survey of Senior Citizens 2011. Retrieved from https://www.duke-nus.edu.sg/care/wp-content/uploads/National-Survey-of-Senior-Citizens-2011.pdf

67   Pension funds online. (2018). Country profiles: Singapore. Retrieved from http://www.pensionfundsonline.co.uk/content/country-profiles/singapore/101

68   Self-employed and unemployed individuals can make voluntary contributions to the account or receive voluntary contribution from their family members.

69   The minimum balance requirement differs between those who own a home and those who do not, as the minimum sum for the former is half of that for the latter. SSA. (2016). Old Age, Disability, and Survivors. Retrieved from https://www.ssa.gov/policy/docs/progdesc/ssptw/2016-2017/asia/singapore.pdf

70   IPS. (2011). National Survey of Senior Citizens 2011. Retrieved from https://www.duke-nus.edu.sg/care/wp-content/uploads/National-Survey-of-Senior-Citizens-2011.pdf

71   Choon, C. (2012). Adequacy of Singapore's central provident fund payouts: income placement rates of entrant workers. Retrieved from http://www.mom.gov.sg/~/media/mom/documents/statistics-publications/occasional-paper-cpf-irr.pdf

72   Asher, M. G. (2013). Singapore's CPF: a sustainable and Fair solution to the country's pension challenge? Retrieved from https://www.imf.org/external/np/seminars/eng/2013/oapfad/pdf/asher.pdf

73   CPF. (2015). Contribution and Allocation Rates from 1 January 2015. Retrieved from https://www.cpf.gov.sg/Assets/employers/Documents/CPF%20Contribution%20and%20Allocation%20Rates%20from%201%20January%202015.pdf

74   IPS. (2011). National Survey of Senior Citizens 2011. Retrieved from https://www.duke-nus.edu.sg/care/wp-content/uploads/National-Survey-of-Senior-Citizens-2011.pdf

75   Statistics Singapore. (2018). Education, Language Spoken and Literacy. Retrieved from http://www.tablebuilder.singstat.gov.sg/publicfacing/createDataTable.action?refId=3019

76   http://www.mom.gov.sg/newsroom/speeches/2011/retirement-age-amendment-bill-2011-2nd-reading-speech-by-mr-gan-kim-yong-minister-for-manpower-11-january-2011-300pm-parliament

77   This means that companies could not ask employees to retire before age 62 years old.

78   Ministry of Manpower. (2011). Retirement Age (Amendment) Bill 2011 2nd Reading Speech by Mr Gan Kim Yong, Minister for Manpower, 11 January 2011, 3.00pm, Parliament.

79   Ministry of Manpower. (2007). A Statistical Profile of Older Workers. Retrieved from http://www.mom.gov.sg/newsroom/press-releases/2007/a-statistical-profile-of-older-workers

80   Ministry of Manpower. (2018). Responsible Re-employment. Retrieved from http://www.mom.gov.sg/employment-practices/re-employment

81   Interview with Walter Theseira, Associate Professor of Economics at Singapore University of Social Science. February 2018.

82   SNEF. (2016). Tripartite advisory on re-employment of employees from age 65 to 67. Retrieved from http://snef.org.sg/wp-content/uploads/2016/09/reemployment_67-1.pdf

83   Ministry of Manpower. (2011). Tripartite guidelines. Retrieved from http://www.mom.gov.sg/~/media/mom/documents/employment-practices/guidelines/tripartite-guidelines-on-re-employment-of-older-employees-gazetted.pdf

84   ILO database. Accessed February 3, 2018.

85   Interview with Amos Garcia, Research Associate at Milken Institute. March 2018.

86   Government. (2017). Budget 2017. Retrieved from https://www.gov.sg/microsites/budget2017/press-room/news/content/speech-by-mos-sam-tan-for-mom-at-the-committee-of-supply-debate http://www.mom.gov.sg/workpro/

87   Government. (2017). Budget 2017. Retrieved from https://www.gov.sg/microsites/budget2017/press-room/news/content/speech-by-mos-sam-tan-for-mom-at-the-committee-of-supply-debate

88   Interview with Christopher Gee, Senior Research Fellow at the Institute of Policy Studies at National University of Singapore. February 2018.

89   Interview with Helen Lim, founding partner and CEO of Silver Spring. February 2018.

90   Asia for good. (2015). Social Enterprise. Retrieved from https://www.asiaforgood.com/social-enterprise/silver-spring-pte-ltd

91   Government. (2016). TODAY Online - Targeted jobs portals aim to help senior citizens, mums and students. Retrieved from https://www.gov.sg/news/content/today-online-targeted-jobs-portals-aim-to-help-senior-citizens-mums-and-students

92   Interview with Helen Lim, founding partner and CEO of Silver Spring. February 2018.

93   Ibid.

94   Ministry of Education. (2018). About us. Retrieved from https://www.moe.gov.sg/about

95   Interview with Christopher Gee, Senior Research Fellow at the Institute of Policy Studies at National University of Singapore. February 2018.

96   World Economic Forum. (2018). Networked Readiness Index. Retrieved from http://reports.weforum.org/global-information-technology-report-2016/networked-readiness-index/

97   IDA Singapore. (2014). ANNUAL SURVEY ON INFOCOMM USAGE IN HOUSEHOLDS AND BY INDIVIDUALS FOR 2014. Retrieved from https://www.imda.gov.sg/-/media/imda/files/industry-development/fact-and-figures/infocomm-survey-reports/0301-2014-hh-public-report-final.pdf?la=en

98   Used the Internet in the last 3 months. Source: IDA Singapore. (2015). ANNUAL SURVEY ON INFOCOMM USAGE IN HOUSEHOLDS AND BY INDIVIDUALS FOR 2015. Retrieved from https://www.imda.gov.sg/~/media/imda/files/industry%20development/fact%20and%20figures/infocomm%20survey%20reports/2015-hh-public-report_final.pdf

99   IDA Singapore. (2016). ANNUAL SURVEY ON INFOCOMM USAGE IN HOUSEHOLDS AND BY INDIVIDUALS FOR 2016. Retrieved from https://www.imda.gov.sg/-/media/imda/files/industry-development/fact-and-figures/infocomm-survey-reports/2016-hh-public-report_april2018.pdf?la=en

100   Ibid.

101   Interview with Christopher Gee, Senior Research Fellow at the Institute of Policy Studies at National University of Singapore. February 2018.

102   Singapore Statistics (2018). Education, language spoken and literacy. Retrieved from http://www.tablebuilder.singstat.gov.sg/publicfacing/createDataTable.action?refId=3019

103   IDA Singapore. (2007). FACTSHEET: Silver Infocomm Initiative. Retrieved from https://www.imda.gov.sg/-/media/imda/files/inner/about-us/newsroom/media-releases/2016/0329_seniors-and-students-foster-new-bonds-through-it-bootcamp/2---silver-infocomm-initiative-factsheet-mar-2016.pdf?la=en

104   Interview with Meng Fong, Executive Director at RSVP Singapore. February 2018.

105   Govlab Singapore. (2017). The Silver Economy. Retrieved from https://www2.deloitte.com/content/dam/Deloitte/sg/Documents/public-sector/sea-ps-govlab-the-silver-economy.pdf

106   https://www.edb.gov.sg/en/our-industries/medical-technology.html

107   Galen Growth Asia. (2017). Healthtech Investment landscape. Retrieved from https://www.galengrowth.asia/wp-content/uploads/2018/02/Asia-HealthTech-Investment-Landscape-Full-Year-2017

108   The World Bank. (2018). Doing Business. Retrieved from http://www.doingbusiness.org/rankings

109   Interview with Jean-Luc Butel, President and Global Health Care Advisor of K8 Global Pte. Ltd. February 2018.

110   Ibid.

111   Interview with Wong Poh Kam, Director of Entrepreneurship Centre at National University of Singapore. March 2018.

112   Prime Minister's Office, Singapore. (2014). Transcript of Prime Minister Lee Hsien Loong's speech at Smart Nation launch on 24 November. Retrieved from http://www.pmo.gov.sg/newsroom/transcript-prime-minister-lee-hsien-loongs-speech-smart-nation-launch-24-november

113   Ibid.

114   TATA Consultancy Services. (2011). Singapore Management University and TCS Announce the Creation of iCity Lab. Retrieved from https://www.tcs.com/singapore-management-university-icity-lab

115   Singapore Management University. (2018). New tech for old folks: Sensors keep close eye on seniors who live alone. Retrieved from https://icity.smu.edu.sg/news/2018/jan/09/new-tech-old-folks-sensors-keep-close-eye-seniors-who-live-alone-0 http://mysmu.edu.sg/faculty/hptan/publications/scc15.pdf

116   Interview with Tan Pink Hwee, Academic Director of the TCS-SMU iCity Lab at Singapore Management University. February 2018.

117   AVPN. (2018). Modern Aging Singapore Accelerator Program. Retrieved from https://avpn.asia/dsp-resource/modern-aging-singapore-accelerator-program/

118   Ibid.

119   Modern Aging Singapore. (2018). The Accelerator. Retrieved from http://modernaging.sg/accelerator/

120   Ministry of Health. (2017). Speech by Dr. Amy Khor, Senior Minister of State for Health, at the Modern Aging Singapore Finale, 24 November 2017. Retrieved from https://www.moh.gov.sg/content/moh_web/home/pressRoom/speeches_d/2017/speech-by-dr-amy-khor--senior-minister-of-state-for-health--at-t15.html

121   Modern Aging Singapore. (2018). The Accelerator. Retrieved from http://modernaging.sg/accelerator/

122   Interview with Wong Poh Kam, Director of Entrepreneurship Centre at National University of Singapore. March 2018.

123   WHO Global Health Observatory Data Repository. Accessed May 17, 2018. Retrieved from http://apps.who.int/gho/data/view.main.SDG2016LEXv?lang=en

124   Ibid.

125   IPS. (2011). National Survey of Senior Citizens 2011. Retrieved from https://www.duke-nus.edu.sg/care/wp-content/uploads/National-Survey-of-Senior-Citizens-2011.pdf

126   Prince, M et al (2015). World Alzheimer's Report 2015, The Global Impact of Dementia: An analysis of prevalence, incidence, cost and trends. Alzheimer's Disease International. Retrieved from https://www.dementiastatistics.org/statistics/global-prevalence/

127   Interview with Peh Kim Choo, CEO of Tsao Foundation, February 2018.

128   World Health Ogranisation. (2017). Current health expenditure (CHE) as percentage of gross domestic product (GDP) (%) Data by country. Retrieved from   http://apps.who.int/gho/data/view.main. GHEDCHEGDPSHA2011v

129   Ministry of Health. (2014). Health care Institution Statistics. Retrieved from https://www.moh.gov.sg/content/moh_web/home/statistics/health care_institutionstatistics.html

130   Singapore Silver Pages. (2017). MediShield Life. Retrieved from http://global-is-asian.nus.edu.sg/wp-content/uploads/2017/05/The-Health care-System-in-Singapore_1406.pdf

131   Klein, E. (2017). Is Singapore's "miracle" health care system the answer for America? Retrieved from https://www.vox.com/policy-and-politics/2017/4/25/15356118/singapore-health-care-system-explained

132   Singapore Silver Pages. (2017). MediShield Life. Retrieved from https://www.silverpages.sg/financial-assistance/MediShield%20Life

133   Those that are not covered by Medisave and MediShield are eligible for MediFund, a means-tested scheme funded by the government.

134   Commonwealth fund. (2018). The Singaporean Health Care System. Retrieved from http://international.commonwealthfund.org/countries/singapore/ http://global-is-asian.nus.edu.sg/wp-content/uploads/2017/05/The-Health care-System-in-Singapore_1406.pdf

135   Ministry of Health. (2012). MOH 2012 Committee of Supply Speech Health care 2020: Improving Accessibility, Quality and Affordability for Tomorrow's Challenges (Part 2 of 2). Retrieved from https://www.moh.gov.sg/content/moh_web/home/pressRoom/speeches_d/2012/MOH_2012_COS_Health care_2020_improving_accessibility_quality_affordability_for_tomorrows_challenges_part_2_of_2.html

136   Interview with Jonathan Tan, Director of Asia Pacific Risk Center at Marsh & McLennan. February 2018.

137   HSBC. (2016). The future of retirement: a new reality. Retrieved from https://www.hsbc.com.sg/1/PA_ES_Content_Mgmt/content/singapore/personal/wealth-management/pillars/retirement/the-future-of-retirement.pdf

138   Ministry of Health. (2012). MOH 2012 Committee of Supply Speech Health care 2020: Improving Accessibility, Quality and Affordability for Tomorrow's Challenges (Part 2 of 2). Retrieved from https://www.moh.gov.sg/content/moh_web/home/costs_and_financing/schemes_subsidies/Community_Health_Assist_Scheme.html

139   Ministry of Health. (2018). Pioneer Generation Package. Retrieved from https://www.moh.gov.sg/content/moh_web/home/costs_and_financing/schemes_subsidies/pioneer-generation-package.html

140   World Health Organization. (2017). Out-of-pocket expenditure as a percentage of current health expenditure (CHE). Retrieved from http://www.who.int/gho/health_financing/out_of_pocket_spending/en/

141   Lee, D. (2017). Singapore Health Care Sector. Retrieved from https://research-doc.credit-suisse.com/docView?language=ENG&format=PDF&sourceid=emblast&document_id=1072359951&serialid=ekHHKC6ypdvwnen2O8w7hgKJPKHZEPKPk5pN%2BAXmBSc%3D

142   Straits Times. (2015). 3000 more health care workers needed by 2020. Retrieved from https://www.straitstimes.com/singapore/health/30000-more-health care-workers-needed-by-2020-to-cater-for-singapores-aging

143   Thompson, P. et al. (2014). Projecting the Number of Older Singaporeans with Activity of Daily Living Limitations Requiring Human Assistance Through 2030. Retrieved from https://www.researchgate.net/publication/260371384_Projecting_the_Number_of_Older_Singaporeans_with_Activity_of_Daily_Living_Limitations_Requiring_Human_Assistance_Through_2030

144   Ariffin, A. MOH increasing home care, day care places for elderly: Amy Khor. Retrieved from https://www.channelnewsasia.com/news/singapore/moh-increasing-home-care-day-care-places-for-elderly-amy-khor-8089316

145   Ministry of Health. (2018). Speech by Dr. Amy Khor, Senior Minister of State for Health, at the 9th International Ageing Asia Innovation Forum, 15 May 2018. Retrieved from https://www.moh.gov.sg/content/moh_web/home/pressRoom/speeches_d/2018/speech-by-dr-amy-khor--senior-minister-of-state-for-health--at-t3.html

146   Ministry of Health. (2000). Establishment of Eldercare Fund. Retrieved from https://www.moh.gov.sg/content/moh_web/home/pressRoom/pressRoomItemRelease/2000/establishment_of_eldercare_fund.html https://www.moh.gov.sg/content/moh_web/home/pressRoom/pressRoomItemRelease/2000/increase_in_capital_sum_for_eldercare_fund.html

147   Commonwealth fund. (2018). The Singaporean Health Care System. Retrieved from http://international.commonwealthfund.org/countries/singapore/

148   Gove, K. (2016). Future of Long term care in Singapore. Retrieved from https://lkyspp.nus.edu.sg/docs/default-source/admissions/mpp/entry-1662-pae_final_report_kimhong_jessica_puttiporn.pdf?sfvrsn=7b13970b_2

149   Interview with Ng Wai Chong, Chief of Clinical Affairs, Tsao Foundation. February 2018.

150   Interview with Jit Seng Tan, Director of Lotus Eldercare Private Limited. March 2018.

151   IBF. (2010). Long term care in Singapore and its challenges. Retrieved from https://www.ibf.org.sg/event/Documents/Long%20Term%20Care%20in%20Singapore%20and%20its%20Challenges.pdf

152   Kit, T.S. (2018). Singapore's household income grew in 2017, income inequality unchanged: Singstat. Retrieved from https://www.channelnewsasia.com/news/singapore/singapore-s-household-income-grew-in-2017-income-inequality-9939710

153   Straits Times. (2017). New ways to fund better long term care. Retrieved from https://www.straitstimes.com/opinion/new-ways-to-fund-better-long-term-care

154   Ministry of Health. (2016). Subsidies for Government-funded Intermediate Long-Term Care Services. Retrieved from https://www.moh.gov.sg/content/moh_web/home/costs_and_financing/schemes_subsidies/subsidies_for_government_funded_ILTC_services.html

155   Channel News Asia. (2017). Singapore's household income grew in 2017. Retrieved from https://www.channelnewsasia.com/news/singapore/singapore-s-household-income-grew-in-2017-income-inequality-9939710

156   For those who couldn't meet the requirements of ElderShield as of 2002 due to old age or pre-existing disabilities, the government also rolled out the Interim Disability Assistance Program for The Elderly (IDAPE) in 2002, providing monthly subsidies of S$150 or S$250 for a maximum period of 6 years. Source: https://www.moh.gov.sg/content/moh_web/home/costs_and_financing/schemes_subsidies/Interim_Disability_Assistance_Programme_For_The_Elderly.html

157   Central Provident Fund Board. (2017). ElderShield. Retrieved from https://www.cpf.gov.sg/Members/Schemes/schemes/health care/eldershield

158   Ministry of Health. (2016). ElderShield. Retrieved from https://www.moh.gov.sg/content/moh_web/home/pressRoom/Parliamentary_QA/2018/eldershield.html

159   The premium ranges between SGD 175 (USD 127) to SGD 3,132 (USD 2300) depending on the age at which individuals are enrolled. (Source: Ministry of Health. (2016). What is ElderShield. Retrieved from https://www.moh.gov.sg/content/moh_web/home/costs_and_financing/schemes_subsidies/ElderShield/Premiums_For_ElderShield400.html)

160   The monthly payout for those who joined the insurance scheme before 2007 is SGD 300 (USD 218) for 60 months and for those after 2007 is SGD 400 (USD 291) for 72 months. If individuals become severely disabled before turning to age 65, they can start to receive monthly ElderShield payouts and no longer need to pay for premiums. (Source: Ministry of Health. (2016). ElderShield. Retrieved from https://www.moh.gov.sg/content/moh_web/home/pressRoom/Parliamentary_QA/2018/eldershield.html)

161   News Asia (2018). Experts suggest bigger payouts, better coverage for enhanced ElderShield [Channel NewsAsia] https://www.gov.sg/news/content/channel-newsasia---experts-suggest-bigger-payouts-better-coverage-for-enhanced-eldershield

162   Interview with Walter Theseira, Associate Professor of Economics at Singapore University of Social Science. February 2018.

163   Institute of Policy Studies. (2011). National Survey of Senior Citizens 2011. Retrieved from https://www.duke-nus.edu.sg/care/wp-content/uploads/National-Survey-of-Senior-Citizens-2011.pdf

164   Ministry of Health. (2015). Annual Cap for Caregiver Training Grant. Retrieved from https://www.moh.gov.sg/content/moh_web/home/pressRoom/Parliamentary_QA/2015/caregiver-training-grant-.html

165   Interview with Normala Manap, Senior Associate Director, Centre for Ageing Research and Education, Duke-NUS Graduate Medical School. February 2018.

166   Jaga. (2018). Trusted professional health care at home. https://www.jaga-me.com/

167   Interview with Julian Koo, co-founder of Jaga-Me. May 2018.

168   Interview with Peh Kim Choo, CEO of Tsao Foundation. February 2018.

169   The Straits Times. (2015). Whampoa's way: Residents live out their golden years in their own homes https://www.straitstimes.com/singapore/housing/whampoas-way-residents-live-out-their-golden-years-in-their-own-homes

170   Mosaic (2016). Welcome to Mosaic. Retrieved from https://www.aic.sg/sites/aicassets/AssetGallery/MosaicPDF/Issue%2025_final.pdf