

The Centre for Liveable Cities seeks to distil, create and share knowledge on liveable and sustainable cities. Our work spans four main areas, namely Research, Capability Development, Knowledge Platforms and Advisory. Through these efforts, we aim to inspire and give urban leaders and practitioners the knowledge and support they need to make cities more liveable and sustainable.

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ISSUE 16 • JAN 2020

URBAN SOLUTIONS



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Hiroo Ichikawa

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 ISSUE 16 • JAN 2020

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Set up in 2008 by the Ministry of National Development and the Ministry of the Environment and Water Resources, the Centre for Liveable Cities (CLC) has as its mission “to distil, create and share knowledge on liveable and sustainable cities”. CLC’s work spans four main areas—Research, Capability Development, Knowledge Platforms, and Advisory. Through these activities, CLC hopes to provide urban leaders and practitioners with the knowledge and support needed to make our cities better. www.clc.gov.sg

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Cover: Elderly people work out with wooden dumbbells at the Togenuki Jizo Kouganji Temple in Tokyo, Japan to celebrate Japan’s Respect for the Aged Day. Image courtesy of Aflo Co. Ltd. / Alamy Stock Photo.

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FROM THE EXECUTIVE DIRECTOR

All Roads Lead to Health

There is a growing awareness among city dwellers about the impact of urban life on their health and well-being, from air pollution and mental stress to lower immunity to diseases.

But can urban life be good for health? How do we create cities that promote good health and well-being for citizens?

In talking to experts and exploring examples from cities across the world, this is what we have learned:

Interventions, both small and large, can have an impact.

We take it for granted but basic public sanitation is critical for the health and well-being of city residents, says Jack Sim, founder of the World Toilet Organization. On the other hand, beyond providing basic health facilities, public health advocate Liak Teng Lit believes in creating health-promoting environments that prevent people from falling ill in the first place. How can this be achieved? Researchers Elly Chiu and Denise Tan explore how cities can redesign their urban environments to promote healthy behaviours through place-based and human-centred approaches, from creating *superilles* neighbourhoods in Barcelona to nudging elevator users towards staircases in Los Angeles. Public transport expert Lucy Saunders outlines how cities can develop Healthy Streets that are inviting, pedestrian-friendly and accessible via public transport.

A city that plays well stays healthy.

We were inspired by examples of how sports could lead to better health for citizens. Kazan clinched a Lee Kuan Yew World City Prize Special Mention in 2018 when it overcame a history of violence and poor public health

by promoting sports and healthy living through good urban planning, community engagement and urban design. Toyama reinvented itself as a compact city for healthy seniors, while Vancouver leads the way in promoting active living and cycling. Singapore is looking to enhance the growth and health of young children through play in nature, as well as in ensuring easy access to sports and recreation facilities for communities.

Most of all, a healthy city is prepared for future disruptions.

In addition to creating conditions that promote good health and well-being, cities also have to deal with issues such as ageing populations and climate change. Cities would need to learn to be smart—to incorporate new technology and leverage data to enhance their ability to adapt to these coming disruptions. Minister for the Environment and Water Resources Masagos Zulkifli shares Singapore's approach to fostering a liveable environment in light of coming climate-related challenges, whereas Dr Hiroo Ichikawa, Professor Emeritus of Meiji University, discusses possible technological solutions to address Tokyo's ageing population and shrinking workforce.

We hope this issue inspires city leaders and citizens to work together to create healthy and liveable cities. I wish you all an enjoyable read.

Khoo Teng Chye
Executive Director
Centre for Liveable Cities



INTERVIEW

Masagos Zulkifli

Building a Healthy City

In the face of climate change and other challenges to Singapore's living environment, Minister for the Environment and Water Resources **Masagos Zulkifli** shares with Joanna Tan about Singapore's approach to fostering a liveable environment that promotes health and well-being for citizens.

What makes a healthy city?

I think there are three elements to a healthy city. The first is the environment. Municipal services must ensure that a city is not only clean with high standards of hygiene, but also pleasant and liveable. The second is social behaviour. If there is a good living environment but citizens have an unhealthy diet or lifestyle, this does not make for a healthy city.

And the third is how the city safeguards the environment and the welfare of its people when things go wrong. For instance, if there is chemical spillage into drains, this needs to be cleaned up quickly to ensure that public safety is not compromised. Health services should also be readily available for people who need them. These three aspects are the foundation of a clean, sustainable and healthy city.

What factors have helped make Singapore a clean and healthy city?

In Singapore, each generation of leaders has built on the efforts of their predecessors. Take clean water for example. We have always ensured that our sewage is properly treated before it is discharged into the sea, which keeps the beaches and waters around us clean. This has enabled us to do two things. First, we have clean seawater for our desalination plants. Second, as the wastewater has already been treated, the cost of reclaiming that water for other purposes is lower. In fact, the cost of turning sewage water into NEWater is only a third of the cost of desalination.

And this is possible because of the cumulative benefits in building on what the last generation has done. This is what we need going forward—to make the right decisions, even if it means overcoming difficult challenges, so that the next generation can build on our work.

Masagos Zulkifli,
Minister for the
Environment and
Water Resources





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What impact will climate change have on the living environment in Singapore?

Climate change will have an impact on three main areas. First, rising temperatures, which will be exacerbated by the urban heat island effect. Second, increased occurrences of extreme weather events. We must ensure that more intense rainfall does not result in flash floods in a built environment, and that there is infrastructure for water retention and management. Third, rising sea levels, which means we have to fortify our coasts and ensure that flooding from storm surges and high tides, together with a higher sea level, does not cause inundation in parts of Singapore.

01 Marina Barrage is a source of water supply, part of a comprehensive flood control scheme, and a destination for lifestyle activities.

“We need to make the right decisions, even if it means overcoming difficult challenges, so that the next generation can build on our work.”

The challenges of maintaining comfortable living and working conditions in Singapore will also be altered. For instance, the use of more air-conditioning to counteract rising temperatures will result in a higher carbon footprint. We need new paradigms to solve these evolving environmental problems. And we need to think about how our city can be designed and built to minimise the use of energy. Part of that entails a change in the way we live.

For example, the atrium of Our Tampines Hub was built without air-conditioning and designed to maintain a comfortable ambient temperature. This was achieved by facilitating air circulation through its design, and the installation of large fans. Such adaptive approaches are important as we address the different impacts of climate change.

Internationally, we are trying to convince the sceptics to be part of this endeavour. There are some countries that do not believe in climate change and worry about the impact on their economic growth, while others are at the other end of the spectrum. I think Singapore, as a small country with a track record of attaining growth without compromising our environment, has been able to play a constructive role. We have brought countries with diverse positions together, and offered the middle ground that it is possible to strive for economic progress while remaining environmentally sustainable.

02 Forest fires had caused severe air pollution and health threats in Indonesia in 2015.

How does the private sector contribute to efforts against climate change? What about citizens at large?

Awareness of the importance of environmental sustainability and the adverse impact of climate change is now high, particularly among producers in the private sector. They recognise that if they do not produce sustainably, there will ultimately be pushback from consumers. Governments and regional groups have also taken proactive stances—for instance, the European Union has planned to phase out the use of palm oil from 2030.

In 2015, global green energy substitution reduced carbon dioxide emissions by 1.5 gigatonnes; however, forest fires in Indonesia released nearly 1 gigatonne of carbon dioxide. The resulting haze from the forest fires not only posed serious health hazards and incurred economic costs, it also represents a major setback in our efforts to fight climate change. This illustrates the magnitude of the impact of our actions. Producers need to take proactive steps towards becoming environmentally sustainable.

There is growing demand from the public for environmentally friendly products. And there are some initiatives by producers to address the concerns of consumers. For example, the Singapore Alliance for Sustainable Palm Oil (SASPO) labels its products to ensure that consumers know they are sustainably produced. It is also important to educate the public on sustainable consumption—for example, reducing excessive usage of plastic bags. It will take a whole-of-society effort to protect our environment, and every effort counts.



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As climate change affects our living environment, it also improves the conditions for the spread of diseases like dengue. What solutions has Singapore come up with?

We have been engaging the public on the importance of practising the five-step mozzie wipeout in their homes. This is critical because the majority of mosquito-breeding sites have been found in households. We must ensure that everyone does their part to ensure that they are not inadvertently breeding mosquitoes. In addition, we are looking at breeding Wolbachia-carrying male mosquitoes

“The haze from the forest fires not only posed serious health hazards and incurred economic costs, it also represents a major setback in our efforts to fight climate change.”

in the laboratory and releasing them into the environment, so that when female *Aedes aegypti* mosquitoes mate with them, their eggs do not hatch. The results have been promising

thus far, with more than 90% suppression of the mosquito population at the study sites. We are currently working on finding the most effective modality for optimal release of the male mosquitoes. While such innovative approaches will enhance our efforts to fight dengue, increased vigilance among citizens in preventing breeding spots remains the most important line of defence.

Cities need access to food that provides sustenance and good health. What are the challenges facing Singapore when it comes to food security?

Rising temperatures and the lack of water due to climate change are anticipated to have a negative impact on the global food supply. This may result in the imposition of export quotas or restrictions by food-producing

countries. Singapore is particularly vulnerable in such scenarios, as we import more than 90% of our food.

We are working towards fulfilling 30% of our nutritional needs through local agriculture by 2030. I have visited Amsterdam, where there is a lot of research and development in growing food, in an environment of ample water but scarce energy. I have also visited farms in the Middle East where there is a lack of water but a surplus of energy. In our case, we have neither water nor energy, and we have limited land. Therefore, we have to think about the kind of food that we want to grow, how we want to grow it, and how we can leverage technology and innovation to enable us to produce the minimum critical supply locally.

01 A National Environment Agency officer releasing Wolbachia-carrying mosquitoes in a public housing estate.
 02 Mee Toh Primary School students trying their hand at composting food waste.
 03 Students showing Minister Masagos the mushrooms that are cultivated at the National Junior College Agri-Tech Research Facility.

“Singapore’s model demonstrates that we can make economic progress while maintaining the integrity of the environment.”



01



02

One common argument against environmental sustainability is that there is a trade-off with progress. Has this been the case for Singapore?

Singapore’s model demonstrates that we can make economic progress while maintaining the integrity of the environment. We have been able to show the world how a densely populated urban environment can be a sustainable one.

When petrochemical firms expand their operations or new firms invest in Singapore, the government works closely with them to ensure a high standard of efficiency, and to implement sustainable practices. This includes respecting and not polluting the environment, and treating and managing by-products and waste. When foreign dignitaries visit Jurong Island, they are surprised by the lack of pollution. This is an example of what Singapore can bring to the world:

responsible production, developing urban solutions and leveraging science and technology to solve the environmental problems that humanity is facing.

The next generation will face more acute challenges and trade-offs that stem from climate change. But we must leave them a nation that gives them faith and hope.

In addition to the deeply embedded ethos of pursuing progress in tandem with environmental sustainability and social inclusion, earlier generations of leaders have left spaces and greenfield sites that the next generation can reimagine to meet their future needs. One of the defining characteristics of Singapore is that we are a city-state that has not deteriorated with age. Instead, we have adapted to changing circumstances and renewed ourselves with each passing year. I am confident that this legacy will endure into the future. 

01 Rich biodiversity continues to flourish in Singapore in spite of its highly urbanised environment.

02 Tree planting events are regularly organised to encourage Singaporeans to get involved in caring for the environment.



Hiroo Ichikawa is Professor Emeritus at Meiji University and the Executive Director of The Mori Memorial Foundation.



Hiroo Ichikawa

Into a Tech-Enabled Future

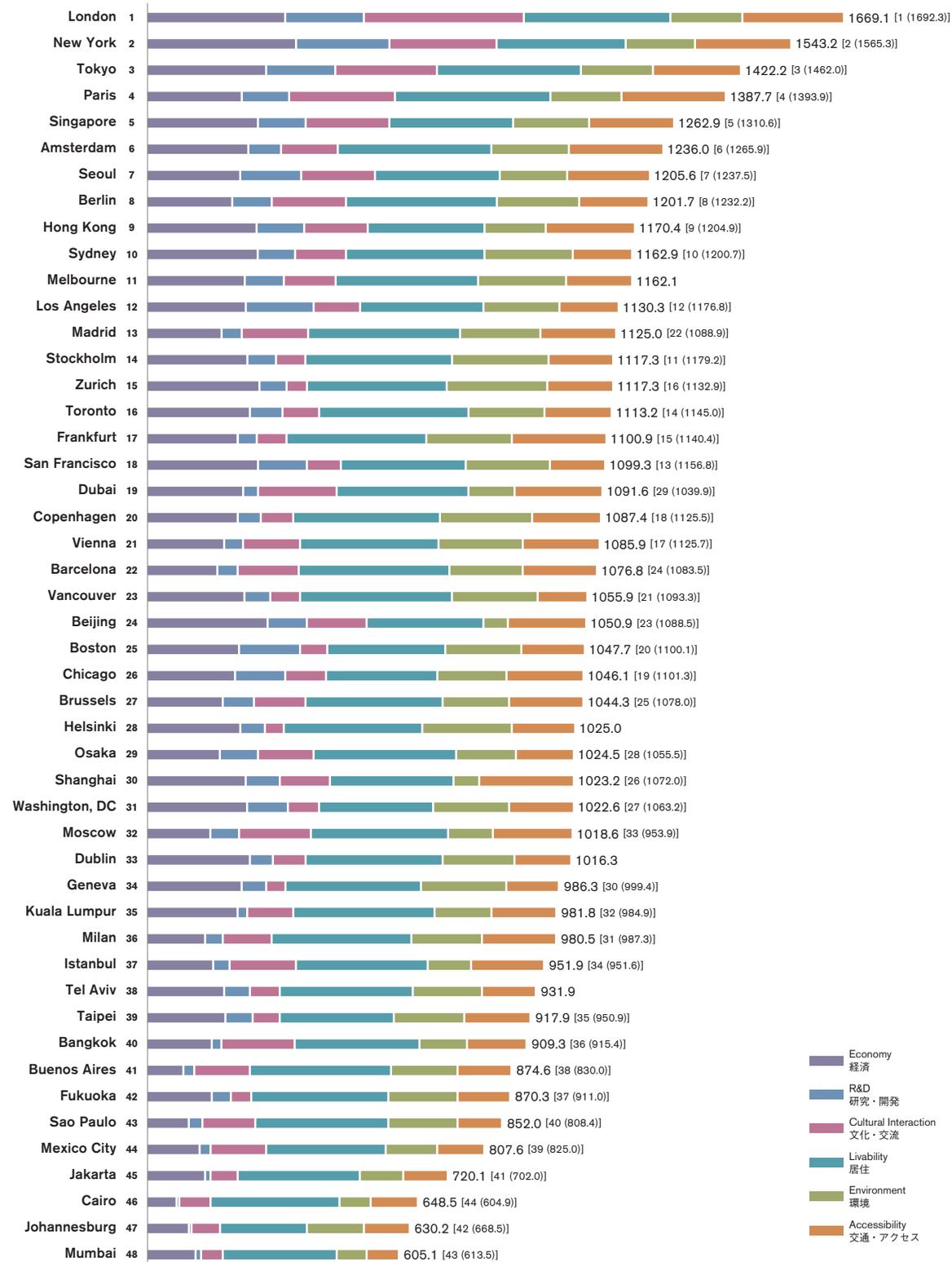
Tokyo, the world's most populous metropolitan region, provides high quality healthcare in a highly liveable urban environment for its citizens. **Hiroo Ichikawa**, Executive Director of The Mori Memorial Foundation, which compiles the annual Global Power City Index (GPCI), outlines Tokyo's future challenges and discusses possible technological solutions as Japan faces a dwindling and ageing population, and a shrinking workforce.

How has Tokyo developed over the years?

Tokyo's population has grown from 1 million in 1910 to over 37 million today, and could reach 40 million. This growth pattern is more or less similar to other cities in the world. This means that the 20th century was a time when cities just became bigger and bigger. Tokyo witnessed its first rapid economic growth period in the 1960s and the city expanded outwards until the 1990s. Then, after the economic bubble burst in the mid-1990s, rentals dropped and people started coming back to the city centre.

How does the Global Power City Index (GPCI) compare cities around the world?

The GPCI evaluates and ranks major cities according to their "magnetism", or their comprehensive power to attract people, capital and enterprises from around the world. It provides a multidimensional ranking by measuring six functions—Economy, Research and Development, Cultural Interaction, Liveability, Environment and Accessibility. The GPCI can grasp the strengths, weaknesses and challenges of global cities in a continuously changing world not only through a ranking, but also by analysing that ranking's specific components.



When we started the GPCI in 2008, other similar rankings were focusing on cities as business or financial centres. However, we evaluate cities comprehensively using six functions and 70 indicators. We rank 48 major cities in the world, and every year we revise several indicators. Currently the top 10 cities are London, New York, Tokyo, Paris, Singapore, Amsterdam, Seoul, Berlin, Hong Kong and Sydney.

In 2002, New York was replaced by London as the top city on the index. Tokyo climbed one rung above Paris after 2013, when it won the bid to host the 2020 Olympics. This year, while there is no change in the overall ranks of the top five cities, the individual scores of Tokyo and Singapore have dropped. This is because Japan's economy has slowed and because of changes in its stock market capitalisation relative to other top cities. The availability of skilled human resources and the start-up environment has also declined.

Singapore's case is a little bit like Tokyo. The number of foreign residents and start-ups are shrinking, and factors like work flexibility and long commuting times have resulted in a lower score for Singapore. Liveability is not bad in Singapore, but it scores lower on factors like private housing rentals and some others.

What does the GPCI tell us about health and well-being of citizens?

The GPCI does not have specific data for these factors. We cover 48 cities, and some have the data while others don't. As this makes comparisons between cities difficult, we don't use it. Like Japan, some other developed countries also have very good policies for people's well-being and medical care.

While the GPCI does not measure well-being, happiness or health specifically, it covers some indicators that influence the overall well-being of a population.

“Positive well-being stems from all areas of urban life and can come from factors such as adequate wage levels that meet the living costs associated with a city, the availability of urban green spaces, or having a short and comfortable commute.”

These are mostly grouped under Liveability and Environment, with indicators such as social freedom and equality, risks to mental health, carbon dioxide emissions and water quality. Positive well-being stems from all areas of urban life and can come from factors such as adequate wage levels that meet the living costs associated with a city, the availability of urban green spaces, or having a short and comfortable commute.

The GPCI, as a comprehensive evaluation of a broad range of indicators, allows for a balanced look at what makes cities excellent places to live and carry out healthy, fulfilling lives. While there is no single perfect city, some notable examples of GPCI cities that offer a high level of well-being are the European cities of Stockholm, Copenhagen and Amsterdam, all of which manage to offer a relatively high level of liveability, while providing a high-quality environment and economic opportunities. Newly added Dublin also balances liveability with economic competitiveness and environmental sustainability, and it even has a good amount of cultural attractions.



01

These cities may not have the economic power of New York, the cultural richness of London, or the broad transportation coverage of large Asian cities, but they offer a sufficient balance of all the conditions that facilitate well-being and health.

For a highly urbanised city like Tokyo, do factors like pollution and stress significantly affect people's health and well-being?

Tokyo has a long history of policies to curb pollution. In the 1960s, there were many factories and automobiles spewing smoke. To stop that, several laws and ordinances were promulgated. This began with the Diesel Vehicle Control regulation in 2003 to control pollution caused by diesel vehicles. Since 2003, Saitama, Chiba, Tokyo and Kanagawa prefectures have prohibited diesel vehicles whose emission levels do not meet specified

standards. Non-conforming vehicles must be replaced with ones that meet the standards or with low-emission vehicles, or be fitted with filtering equipment certified by the prefectural governments.

Since then, Tokyo's air has been quite clean. The river is also very clean. Now there is a river cruise, which was not possible 20 years ago because of the smell. Tap water in Tokyo is also safe to drink. Overall, Tokyo's environmental quality is very good. However, despite the high quality of water and air, noise pollution still persists.

Stress depends on individual perceptions. Cities like Hong Kong and Tokyo are quite congested and crowded, but they might not be stressful for people who have grown up in such conditions, unlike people from countries with fewer people.



02

What factors distinguish the quality of health and well-being in Tokyo from other developed Asian cities?

Tokyo's budget is quite big. It is close to that of Korea. The local government is quite rich and, generally speaking, policies pertaining to health and well-being are of a high quality in Japan. The country's life expectancy is among the highest in the world, especially for men. Number one is Hong Kong at 84.7 years on average, and for Japan it is 84.2 years. Singapore is not bad at 82.9 years.

The reason is that in Japan we have a medical system where, up to the age of 75, we have to pay 30% of the costs of medical care while the government or association pays the remaining 70%. After the age of 75, you pay

only 20%. Sometimes, depending on the local government, you pay only 10%. Therefore, people have a good chance of getting good medical care without paying too much. Several types of subsidies are also provided for the disabled or for new mothers.

Overall, Tokyo's environmental quality is very good. However, despite the high quality of water and air, noise pollution still persists.

01 The popular St Stephen's Green provides green respite in Dublin's city centre.

02 Tokyo boasts a high-quality living environment, despite being highly dense and populated.



01

To what extent does income inequality affect the health outcomes of the Japanese?

So far, we have a highly refined Asian system that covers even low-income people. But my concern is that in the next 20 years, a smaller budget could pose challenges. As an ageing society, we face a reduction in the number of younger generations of Japanese who pay taxes, which funds pensions.

At present, there are no answers as to what will happen to the elderly. Maybe, as in the case of the United States, the rich could pay for themselves. But for the low-income elderly, it's going to be quite hard in the future. While we are not having serious discussions about this at present, it could be a very stressful subject in 20 years.

What are some key challenges that Tokyo will face over the next 20 years and how are they being addressed?

Japan's population started to decline after 2011, and we may see the same in the Tokyo metropolitan region in the next five to 10 years. In other cities like Singapore,

New York and London, the population is still growing. But we are at a very different stage. Our population is shrinking, which will lead to shrinking labour force and a loss of economic power.

What are the solutions? Well, we could have more immigrants. We are studying Singapore's case and are quite careful. Technology is another solution. It is important to consider how technological advancements can change the future and help people. For example, with an ageing population we need helpers, but maybe half of those needs can be replaced by robots. In the next 20 years, taxi and bus drivers will disappear as autonomous cars are adopted.

We have forecasts in four categories: future living—with the arrival of a sharing economy or a sharing era; future work—where artificial intelligence and robots will work well; future mobility—where autonomous vehicles will become popular; and future entertainment—which will combine the real and virtual worlds. However, while these developments are technologically feasible, it takes time to change regulations and laws, so I'm neither pessimistic nor optimistic.

“It is important to consider how technological advancements can change the future and help people.”



02

01 Japan has the fastest-ageing population in the world.

02 Young Japanese will become a less common sight in the future.



What about issues of gender inequality and an ageing workforce?

In my view, since we need more workers, the solution should be to increase the participation of women and older people in the workforce. With more opportunities, I am optimistic that gender equality and inclusivity will improve.

The issue of ageing is quite serious in cities like Tokyo and Seoul, and soon in Chinese cities as well. Policies to address the needs of an ageing society will vary according to its income base. While the rich won't need any help from the public sector, taking care of low-income elders presents a serious challenge. The Japanese government has floated an idea that since Tokyo's population is high, the elderly could move to other cities or suburban areas. However, smaller towns and cities don't easily accept newcomers, so large cities will still have many ageing people. The question for Tokyo and other cities in the world, therefore, is how to sustain that.

How does climate change affect Tokyo and how is the city preparing for it?

The urban heat island effect is a serious challenge for Tokyo. Some parts of the city centre are becoming warmer, and they remain so even at night. This occurs because of the warm air generated by air-conditioning in houses and buildings. Now we are working on technology to limit the heat generated by air-conditioning.

Another challenge is on-road heat. In the daytime, the temperature can be 35°C, but it can reach about 50°C on the road. The Tokyo Metropolitan Government has been installing solar heat-blocking pavement around the city in an effort to reduce the effects of road surface heat and its contribution to the urban heat island effect. This has helped to reduce ambient temperatures by as much as 10°C. Such technological adoption is necessary.

Because of climate change, we already have heavy rain in Tokyo every year. Our future planning should consider this as well.

Are there lessons for Tokyo from other cities to mitigate the effects of climate change?

Singapore can get very hot, while Canadian cities freeze in winter. In Canada, many cities have large underground spaces that allow people to escape the cold. In Singapore, you also have underground passages and links between buildings, as well as covered parking spots and walkways. Such efforts make cities more comfortable. The temperature in Tokyo is going up year by year, and maybe in the next 10 to 30 years, Tokyo might become as hot as Singapore. Dealing with that will be a very important aspect of planning. 

01



02

01 Foreigners are increasingly hired as healthcare workers to address the labour shortage in Japan.

02 Parasols and shade provide brief respite during hot summers.



OPINION

Liak Teng Lit

Prevention is Better Than Cure



“It takes a village to look after the frail elderly and to look after one another.”

Cities must find ways to address healthcare challenges that go beyond the provision of healthcare facilities. A better way is to create health-promoting environments that prevent people from falling ill in the first place. **Liak Teng Lit**, former Chairman of the National Environment Agency of Singapore and Chief Executive Officer of various public hospitals in Singapore, explains how.

Healthcare Challenges

We are genetically programmed for a different world. Genes that were important for our ancestors in a world of scarcity, where they were driven to consume large amounts of high energy and salty food for survival, have led people to overeat in our modern context when such food is now overabundant. Obesity has become a global epidemic, leading to major chronic illnesses such as diabetes.

In addition, lack of courage in society to address end-of-life issues has resulted in the mindless extension of lives, with many of the elderly “living” out their last years severely demented, bedridden, in pain and with little meaningful interaction with others.

Also, in many cities, healthcare resources are concentrated in a small number of acute care general hospitals that are often located in or around the city centre. Smaller regional or community hospitals are in turn under-

developed and under-resourced. Patients who live far from the city centre are forced to travel great distances to visit the large hospitals for relatively simple or routine tests and minor surgeries.

Much of what we term “healthcare” is in fact “illness care”, where we fix what has gone awry. But spending on illness care does not correlate well with actual quality of health. The United States spends one of the highest amounts in the world on healthcare—but Americans’ health are far from stellar. Overspending on illness care diverts resources from other essential investments, some of which are equally or even more important for population health.

In the face of a chronically ill and rapidly ageing population, the solution is not to spend more on healthcare facilities. Prevention is better than cure—a health-promoting environment is the first line of defence.

Strategies Beyond Healthcare

People-centric planning

Healthcare resources should be distributed based on residents' needs, and performance targets should be set. For example, for patients to be conveyed from their home to the hospital in emergencies within 10 min, the hospital should be no more than 8 km away. For healthcare facilities to be accessible within 10 min by public transport, they should be no further than 2 km away. This applies to facilities providing diagnostic and treatment services for most chronic diseases and minor surgical procedures, and nursing homes. Finally, for facilities to be accessible within 10 min by foot or wheelchair, they should ideally be no further than 200–300 m away.

Enable self-care and community care

For many patients with chronic diseases, the best care is self-care. For the frail elderly and the dying, the best care is often care given by family members and neighbours, at home and within the community. Such care is often available immediately, and is personal and cost-effective.

Promote healthy eating and exercise

Access to healthy food is important for health. Cities should be planned to enable preferential access to fresh food in the community. Community gardens and farms can also produce a significant amount of fresh vegetables, fruit and fish for local consumption. Easy access to recreational facilities like parks and well-shaded public spaces will encourage people to exercise and go outdoors.

Human-scale communities bring people together

Good relationships and regular social interaction with others are key determinants of well-being, health and longevity. Therefore, it is important to design the living environment to encourage interactions. Neighbours are more likely to know and care for one another if they live within a community with fewer than 2,000–3,000 people.

“Good relationships and regular social interaction with others are key determinants of well-being, health and longevity.”

One way is to create ample positive spaces that encourage residents to linger and interact with one another. Places like convenience stores, hair salons, coffee shops, playgrounds and even comfortable seating in the neighbourhood provide a vibrant environment that would draw residents out of their homes.

A recent prototype of a “vertical village for the future” is Kampung Admiralty, a precinct in Singapore. The variety of public spaces found there, from a large 1,000 m² community plaza, to a community farm and even small intimate spaces appears to have encouraged much interaction among residents. Co-location of childcare, senior care and activity centres, has also facilitated natural mixing between the young and old.

It Takes a Village

A healthy city needs much more than hospitals, clinics and other healthcare facilities. It also needs to have health-promoting features that encourage people to be physically active, eat healthily, stay socially engaged and connected to one another, contribute and be happy.

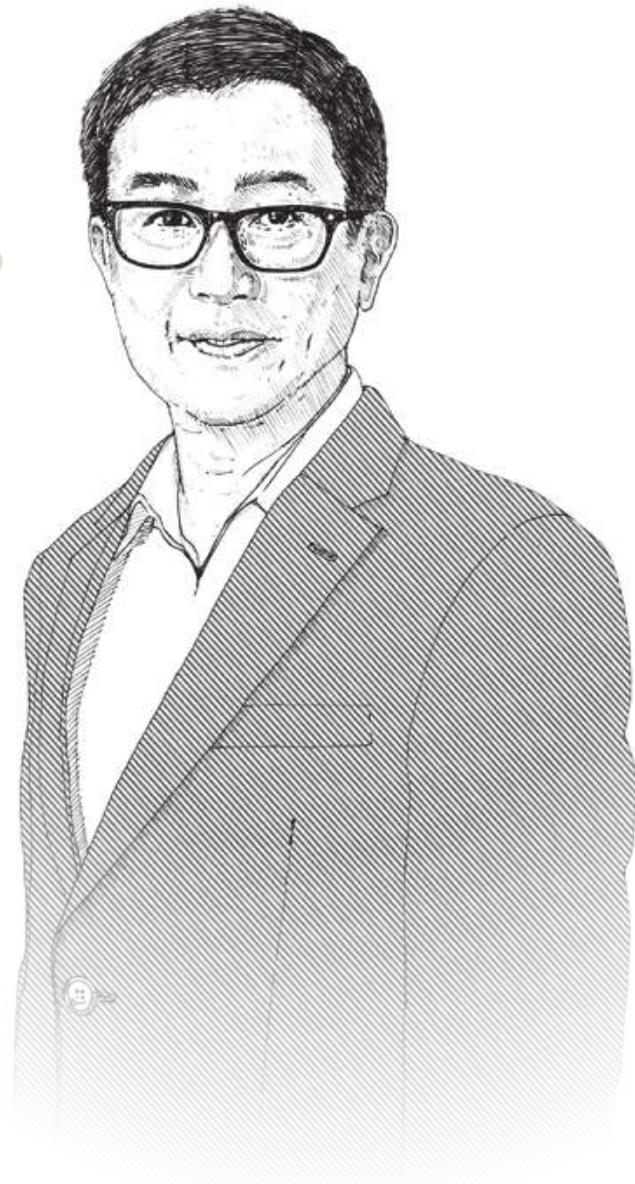
Health and happiness are closely linked to our sense of control and sense of contributions. A healthy community needs to have the “heartware” that can engage everyone in the community. Traditional villages, especially in agrarian societies, have evolved ways for everyone to find their own ways to participate and contribute to the rest of the community. The same goes for modern cities. Creating human-scale communities that encourage people to get together and care for one another is an important first step. It takes a village to raise a child. It also takes a village to look after the frail elderly and to look after one another. 



Jack Sim

The ABCs of Public Sanitation

“Cities and buildings become dysfunctional when good, clean toilets are absent.”



Jack Sim, founder of the Restroom Association (Singapore) and the World Toilet Organization, explains why public sanitation is critical for protecting the health and well-being of residents in cities.

Toilets. Pee. Poo. Sanitation. These are not sexy subjects to talk about, but how they are managed is essential to our quality of life. This is especially important in cities, where many people live in crowded, polluted and—worse—unsanitary conditions.

This article will address the importance of public sanitation in cities and give suggestions on areas for improvement—in alphabetical order for easy recall.

Proximity to proper functioning toilets, as well as a good waste management system, is necessary to maintain good sanitary conditions in cities. Without these, the health of citizens would be at risk.

Architecture of Cities

Cities are designed for people and people need to use the toilet every two to three hours. Cities and buildings become dysfunctional when good, clean toilets are absent. Yet most architects are not “toilet-trained”.

We need human-centred design for public toilets in buildings, transport, parks, shops, places of worship, schools, highways, tourist attractions and all locations away from home.

Proximity to proper functioning toilets, as well as a good waste management system, is necessary to maintain good sanitary conditions in cities. Without these, the health of citizens would be at risk.

Behaviour of People

The relationship between people and toilets, or the managers of such facilities, is similar to any other relationship. If the facility serves users well, users will treat the facility with respect. Toilet users are like customers—always hold them in esteem and do everything to serve them by ensuring that toilet facilities are clean and work well.

Cleaning Training

The function of a toilet is to receive human waste but it cannot self-clean. A dirty toilet requires human intervention to bring it back to a state of cleanliness. The toilet cleaner is a technician who needs to be professionally trained and remunerated to produce dry and hygienic conditions. If training is neglected, toilets will be dirty, wet, smelly and unappealing to users.

Design

To achieve good toilet design, ergonomics and a good understanding of user behaviour is critical for selecting the right material, sanitary ware, equipment and supplies. Ventilation, natural lighting and creating an inviting environment are also important to lift spirits and inspire joy in the place. All these matter in ensuring the well-being of the user. Design for happiness and relief and you will get it right.

Environmental Pollution of Waterways

4.5 billion people’s excreta is not treated before discharge. This includes the nearly one billion who defecate in the open and those with toilets that discharge directly into rivers, seas, lakes and open spaces.

Such environmental pollution contaminates good drinking water and spreads diseases. Half of all hospital beds in developing countries are occupied by patients suffering from waterborne diseases. Diarrhoea kills more children every year than HIV-AIDS, measles and malaria combined.

Funding, Government Policy and Health

Prevention is cheaper than cure. Sanitation was voted by the British Medical Journal as the most important medical advancement in the last two centuries. The invention of the flush toilet has extended life expectancy by 20 years.

Investment Return

Healthy nations are productive nations. Analysis by World Bank economist Guy Hutton reveals that every dollar invested in sanitation has a fivefold return on investment by reducing non-working days, medical expenses and productivity losses.

I created 19 November as World Toilet Day, which was unanimously adopted by all 193 countries of the UN General Assembly. This day was established to draw attention and inspire action to address the global sanitation crisis. It is important for us to generate greater awareness of this issue, in order to protect the health and well-being of residents in the cities by promoting and driving demand for a higher quality of life.

The toilet is the happiest room in the world. You go in unhappy and come out happy and relieved. My wish is for all readers to have a happy, healthy and dignified relationship with your life partner, the toilet. 



ILLUSTRATION

Benefits of Staying Active

The Power of Physical Activity

Is it possible for a city to measure the success of its physical activity programmes? Active Citizens Worldwide (ACW) was established in 2017 to help cities transform sport participation and physical activity using data and analytics. It generates data-driven insights on physical activity levels and behaviours, drivers of activity and its outcomes in cities across the world. Find out how promoting physical activity among citizens brought value to four ACW cities: London, Singapore, Auckland and Stockholm.

Physical activity produces health, wealth and happiness

Quantifying the value of physical activity helps cities understand and harness their true power. ACW measured the benefits across three dimensions: health, social and economic. While the combined annual economic contribution across the four cities nears US\$14 billion (S\$19.4bn), physical activity also generates significant financial and non-financial benefits to cities through improved health and social outcomes.

Economic Outcomes



US\$9.9bn
(S\$13.7bn)
Participation Consumption



US\$4.0bn
(S\$5.5bn)
Workforce Contribution

Social Outcomes



1.6bn
Hours of Positive Interaction



600
Juvenile Crimes Prevented



US\$61m
(S\$84.5m)
Annual GDP Growth Owing to Improved Educational Performance

Health Outcomes



3.2m
Sick Days Prevented



4,400
Deaths Prevented



120k
Disability-Adjusted Life Year (DALY)



US\$1.6bn
(S\$2.2bn)
Healthcare Savings

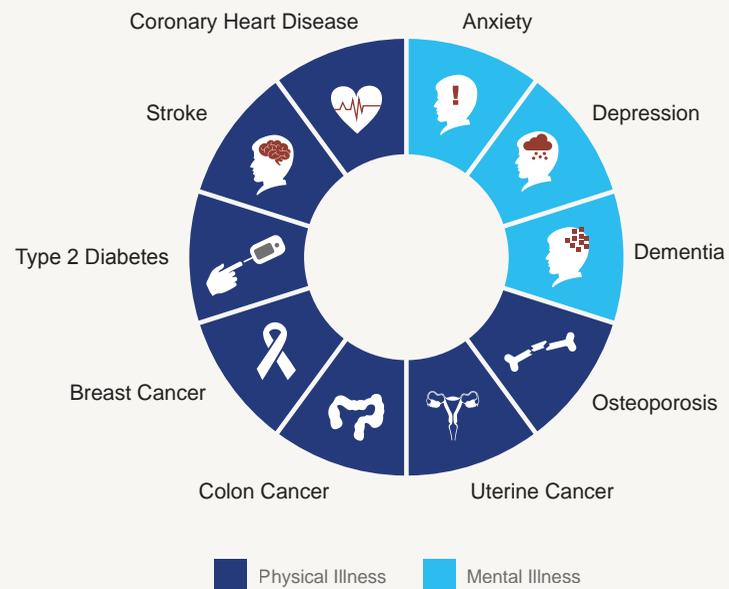


US\$500m
(S\$692.8m)
Productivity Savings

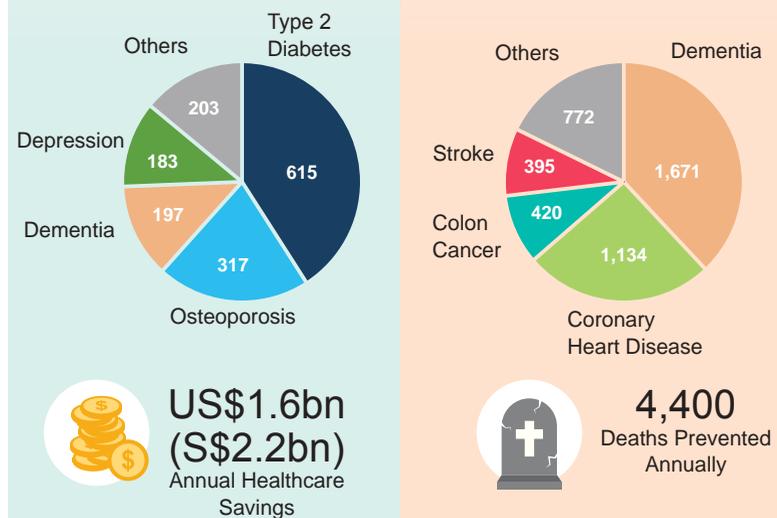
Active lives are longer and healthier

Across the four cities, physical inactivity causes 1 in 10 deaths worldwide. A physically active city generates benefits for both individuals (4,400 premature deaths prevented across the four cities) and healthcare provision (US\$1.6billion (S\$2.2bn) healthcare savings across the four cities). By providing detailed information to the cities of the gender-specific impact of physical activity across 10 disease groups, ACW has enabled the four cities to understand what can be done to improve the health of their citizens.

Disease Groups Associated with Physical Inactivity



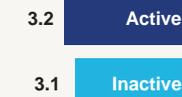
Estimated Healthcare Expenditure Savings and Deaths Prevented Through Physical Activity



Physically Active Individuals are Happier and Trust Others More



+3%
Average Trust in Local Area (out of 5)



Physically Active Individuals Report Higher Levels of Life Satisfaction



+6%
Average Life Satisfaction (out of 10)



Physically Active Individuals have Reduced Risk of Psychological Distress



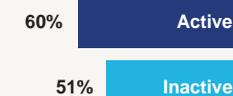
-14%
Average Level of Psychological Distress



Participation in Sport Encourages Social Empathy



+17%
Average Perception of Caring for the Community



Physical activity is a social force for good

The social impact of sport and physical activity is often overlooked, yet it is one of the most important to policymakers. Analysis from each ACW city demonstrates that physical activity increases trust in others, reduces psychological distress, drives higher life satisfaction and encourages social empathy. The type and context of activity is important—typically we see participation in team sports driving higher benefits, but bringing a social element to individual exercise can generate similar impacts.



ESSAY

Designing for Health

Secrets to Healthier, Happier Citizens

Shaping the urban environment has a significant impact on citizens' physical and mental health. Yet, the complexity of cities and human behaviours means a linear planning approach has its limitations. **Elly Chiu** and **Denise Tan** explore new, human-centric approaches adopted by leaders and planners to shape their cities for health.

Urban living contributes to a range of health issues, from disease and death caused by air pollution, to heightened risk of disease outbreaks. Ageing, mental health issues and the rise of chronic illnesses further weigh on the health outcomes of citizens.

To keep citizens healthy, the typical approach of many cities has been to target healthcare delivery and devote most resources to building better healthcare institutions and equipping healthcare practitioners, where treating diseases and containing the spread of infection is the focus. Yet evidence shows that a healthy city is more than good healthcare delivery. It is in fact people's behaviours, and the environments they live in, that contribute most significantly

to their health. Such notions are the foundations for healthy city initiatives that have grown rapidly in the last few decades.

Specifically, Dahlgren and Whitehead's seminal paper provided a framework that outlines the influence of genetic and physiological factors, individual lifestyles, and wider socio-environmental conditions on population health. Subsequent studies in different parts of the world have since established the relative influence of these factors on health outcomes. Socio-economic and environmental factors account for more than half the variation in population health outcomes, followed by healthy behaviours, healthcare, and finally genetic and physiological factors.



Elly Chiu is a researcher at the Centre for Liveable Cities.

Denise Tan is trained in architecture and works at the Ministry of Health Singapore's Office for Healthcare Transformation.

Proportion of Impact of Major Determinants on Health



Adapted from Buck D, Baylis A, Dougall D, Robertson R (2018)

Socio-economic and environmental factors have the greatest influence on population health outcomes.



01

Place-Based Approaches to Population Health

Armed with this understanding, cities around the world have successfully developed health-promoting neighbourhoods and districts, which integrate the planning and programming of the built and social environments to bring about improved health outcomes.

Barcelona introduced the *superilles* (superblocks) system, which channels traffic to a smaller number of larger roads, creating mini neighbourhoods around which traffic will flow. By cutting down the amount of pollution, congestion and noise in residential neighbourhoods, and repurposing the freed up space as “citizen spaces”, the quality of the environment for residents is improved, promoting physical activity and driving better

Cities around the world have successfully developed health-promoting neighbourhoods and districts, which integrate the planning and programming of the built and social environments to bring about improved health outcomes.

health outcomes. Research has estimated that, with the superblocks, almost 700 premature deaths from air pollution, noise and heat could be prevented each year, and, if the idea is rolled out across the city, residents could expect to live an extra 200 days.

01 Aerial view of the superblocks system in Barcelona.

02

In Japan, Kashiwa-no-ha Smart City—a 2.73 km² development in the north of Kashiwa—was initiated in 2000 with the aim of improving the health of its ageing population. The district was designed in a compact way to encourage walking and cycling, with mobility stations that allow residents to rent bicycles and hail buses on-demand. To further promote healthy behaviours, Kashiwa-no-ha opened a one-stop centre to provide elderly residents with information on nutrition and exercise, and non-strenuous job opportunities.

In Bowden, an inner suburb of Adelaide, South Australia, urban renewal strategies are being adopted with the explicit aim of addressing poor mental health in the area.

Strategies included the adoption of green, active, safe and “pro-social” spaces that enhance well-being. Even the preservation of heritage in the district was done with the aim of encouraging communal identity, to improve mental and community resilience.

In Singapore, the Active, Beautiful, Clean Waters (ABC Waters) programme has created public spaces for people to enjoy nature, while tackling water supply and flood management requirements. By incorporating biophilic design that strategically deploys the elements of water, flora and fauna, spaces in the city such as Bishan-Ang Mo Kio Park reconnect people with nature and provide open spaces for recreation and social activities, in turn improving users’ physical and mental health.

02 Features at Bishan-Ang Mo Kio Park, like the popular naturalised stream, bring people closer to nature.

Limitations and Unintended Consequences

By shaping the environment, place-based approaches can have a significant impact on how people behave. Yet, it is challenging for city leaders and planners to anticipate human behaviours. Urban planning interventions and initiatives may, in fact, backfire and nudge unhealthy behaviours instead. One study by Lesser et al. (2013) reveals that a higher density of outdoor advertisements promoting food and beverage in the United States was associated with higher obesity levels. Another study by Sallis et al. (2016) showed that increasing public transport density correlated to higher physical activity, but reducing the walking distance to public transport points did not correlate with higher physical activity, suggesting that shortening distances in public transit is not a strong enough nudge for physical activity.

A linear planning approach to promoting population health in urban settings may also be insufficient. A multi-disciplinary study by the UCL-Lancet Commission on Healthy Cities showed that the complexity of cities makes it difficult to capture all the necessary information about what affects urban health in one plan or strategy. Multiple interacting factors shape population health in ways that cannot always be anticipated in advance. Changing the urban environment to improve health outcomes could thus have unintended consequences—if not managed and monitored carefully.

For example, it is widely accepted that greening a city has positive effects on people's physical and psychological

well-being. Yet, a 2017 study by Cole et al. showed that successful greening efforts may inadvertently lead to the gentrification of surrounding areas, thereby reinforcing health inequalities. Socially and economically vulnerable residents were excluded from the potential benefits to health that these improvements brought due to forced economic displacement and social alienation.

New Tools to Shape Our Cities for Health

In the face of complexity and ambiguity, planning for health requires cities to adopt less conventional measures to encourage healthy behaviours, mobilise stakeholders in the community, promote experimentation, and leverage data in planning and assessing the success of initiatives.

One way to nudge users towards health behaviours is to introduce changes in the built environment. For example, in a study conducted by the Georgia Institute of Technology College of Architecture, elevators in a high-rise office building in Los Angeles were programmed to stop only at every third floor, while staircases were designed adjacent to the elevators to encourage physical activity. The adjacent staircase ended up being used 49.75 times more than enclosed stairwells or the traditional vertical circulation core. In another example in Los Angeles, new pocket parks—small green spaces in otherwise built-up areas—were placed in low-income neighbourhoods to encourage nearby residents to use the parks. A post-implementation review showed that these were useful to promote moderate-to-vigorous physical activity among low-income residents and encouraged more visits from families with children compared to existing playgrounds in nearby parks.

“In the face of complexity and ambiguity, planning for health requires cities to adopt less conventional measures.”





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Another way is for local authorities to co-create solutions with the community. In Tokyo, the metropolitan government empowers citizens to influence the design of their neighbourhoods in a process called *machizukuri*, in which they work together with urban designers to implement initiatives such as greening. Not only does access to greenery in the neighbourhood improve health outcomes, community involvement in shaping a neighbourhood's identity also fosters opportunity and belonging, which are integral to mental health. A Japanese study has shown that having green space within walking distance from home and a positive attitude towards the local community consistently increases longevity, regardless of demographic factors.

The United Kingdom's Healthy New Towns programme has also been successful in establishing a shared vision for creating healthy towns and cities of the future. The programme funded 10 towns to inject new dwelling units on greenfield sites and brought local councils, developers, architects, healthcare workers and the community together to implement integrated strategies, such as incorporating "principles of healthy living" in planning agreements in Whyndyke Farm, piloting an app for managing mental health in Cranbrook schools, and implementing 5 km "Health Routes" in Bicester.

By investing in place-based approaches that adopt a process of continuous learning, experimentation and fine-tuning, city leaders have a good chance to create healthier cities.

Other cities empower people to provide care directly for their own communities. For example, the Thrive initiatives in London and New York seek to mobilise local communities to promote positive mental health. A key aspect of this is to empower individuals in the community to deliver healthcare. For example, non-specialists in community-based organisations are given the skills and knowledge to deliver mental health interventions, while city employees themselves are trained in mental health first aid.

Cities have also leveraged data to develop more targeted, granular solutions for their residents. In Campinas and São Paulo, Project CityZen is being piloted to help improve preventive health among the elderly by developing a digital platform that maps their income, dependency and frailty needs. The resulting data is used to prevent further frailty and reduce the burden on healthcare infrastructure.



02

An Iterative Way Forward

The popularity of place-based approaches to improve people's health outcomes in cities will likely continue. Yet, it is important to note that cities and human behaviours are complex, and relations between interventions affecting the urban environment and population health outcomes are not as linear as may be presumed. As such, cities should consider ways to leverage complexity and behavioural science in their planning and initiatives. Alongside this, urban planning for health would do well to mobilise the population and promote local experimentation, while measuring the impact of such efforts.

Singapore's Ministry of Health (MOH) Office for Healthcare Transformation has a programme to develop healthy precincts in public housing estates and public areas. The programme works with the local population, agencies and community leaders to understand the links between socio-environmental determinants in selected precincts and the health behaviours of residents. It will introduce solutions to address the socio-environmental determinants and facilitate healthy behaviours, and measure their impact.



03

Through an iterative approach, successful initiatives may be scaled up and applied in other precincts.

There is much that we have yet to learn about shaping our cities for health. But by investing in place-based approaches that adopt a process of continuous learning, experimentation and fine-tuning, city leaders have a good chance to create healthier cities that enable residents to flourish. ●

01 Thrive London empowers individuals in the community to deliver mental health interventions.

02 CityZen is a citizen-centric digital platform that brings healthcare service right to the fingertips of the elderly in Brazil.

03 The preliminary Healthy Precinct Framework developed by MOH's Office for Healthcare Transformation (2019).



ESSAY

Inclusive Streets

Move in the Right Direction

Lucy Saunders developed the Healthy Streets Approach through her research into the health impacts of transport, public realm and urban planning. She identified 10 indicators necessary for public spaces to improve people's health. Her model was first adopted in London and is now being applied in cities around the world.

Successful cities around the world are facing the same challenge: a growing population that is causing increased congestion and pollution. This leads to a decline in the quality of life for citizens, which threatens the city's continuing prosperity. In the past century, attempts have been made to address congestion and pollution by building more roads. The result was induced demand: roads quickly filled with more vehicles, increasing congestion and pollution, eroding the quality of life. So how can cities successfully grow without increasing congestion and pollution? By creating a demand for clean, healthy, space-efficient travel: walking, cycling and public transport.

Global cities have known this for some time. Transport policies since the turn of the century have been aimed at shifting travel from private cars to sustainable, healthy options. This has included an

overhaul of bus travel in London, a programme of road-space reallocation to create bike tracks in New York, removal of car parking in Oslo and road user charging in Singapore. However, no major city has managed to keep pace with the needs of its citizens.

City dwellers around the world are facing an epidemic of physical inactivity (lack of daily exercise) because they are not able to build walking or cycling easily into their daily routine. This results in a wide range of health consequences including overweight and obesity, cardiovascular and musculoskeletal illnesses, depression and anxiety. In addition, our understanding of the health impacts of urban noise and air pollution is growing and there is a growing body of scientific evidence showing the negative impacts these have on unborn babies, cardiovascular and pulmonary disease, sleep and performance at school and work.



Lucy Saunders is a public health specialist, urbanist and transport planner.



Cycle Superhighway in central London separates people walking and cycling from automobiles for a safe and relaxing journey.

So how do we ensure our urban transport policies achieve the pace and scale of change that is needed to see real population-wide benefits? We need to focus on the outcome we are seeking to achieve, which is a healthy environment in which everyone can live well. Evidence from studies around the world shows that people will not choose to travel in healthy, space-efficient ways unless we ensure the environment they are travelling in is comfortable and attractive to walk, cycle and spend time in.

We need to accommodate everyone. Special consideration needs to be made to ensure streets and public transport are welcoming to older people, children, disabled people, people travelling in groups, people visiting and working in the city, as well as people living in the city. We also need to consider all possible times of the day and weather conditions because when people need to travel, it is often not an option to cancel or postpone their trip.

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An effective framework for achieving this is the 10 Healthy Street Indicators. These focus on the human experience and show what really matters on all streets, everywhere, for everyone. By improving these indicators, cities know they are addressing the major negative health impacts of cities: physical inactivity, road traffic injuries, noise and air pollution, social isolation and loneliness.

Importantly, we can only improve these indicators by reducing the dominance of private motorised vehicles that are responsible for many of these health problems. People are not willing to walk or cycle in constrained spaces dominated by noise, pollution and danger. People will choose to travel in a private car if they can, even though it is not the best choice for their own health or the health of others in the city. So it is not sufficient to provide the choice of active travel versus private car. Active travel needs to be a more convenient and attractive alternative.



© Lucy Saunders

02

How do we get Healthy Streets?

To make streets healthier we must first assess how they perform against the 10 Healthy Street Indicators and then seek to improve their performance. It is possible that a quiet back alley performs well in the “not too noisy” and “easy to cross” categories, while a busy main street does better for “things to see and do” and “places to stop and rest”. However, to

ensure the public environment is healthy and welcoming to all people then we must improve and balance all of the indicators. The back alley may be quiet and easy to cross but if it also feels drab or even unsafe, people will not be willing to use it. The main street may have lots of attractions and places to rest, but if it is also noisy and difficult to cross with narrow footpaths, then many people will not want to do so, and some will not be able to use it. Once

01 Narrow streets are designed to prioritise people walking and the vehicles are ‘guests’ in these spaces.

02 The 10 Healthy Street Indicators focus on the human experience and show what really matters on all streets, everywhere, for everyone.



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you start looking into the Healthy Street Indicators it becomes clear that they are interdependent, which is because the human experience is multidimensional. A street that is noisy is less likely to be safe and as a result, people are less likely to want to walk or cycle on it.

To achieve improvements in the 10 Healthy Street Indicators, the first thought is often to redesign the street in some way. A wider footpath makes the street feel safer and more relaxing for walking and creates space for seating, planting and bicycle parking. This also serves to narrow the road space for motorised vehicles, leading to steadier, more courteous driving behaviour.

However, there are many ways the experience of being on the street can be improved without engineering. Examples include: enforcing the speed limit and

“Roads need to dedicate more space for sustainable, healthy modes of travel.”

parking rules; activating public spaces with art and novelties that encourage play and reflection; and managing servicing, deliveries and construction work to reduce the number of vehicles people have to interact with when walking or cycling.

The design and management of buildings that line the streets also influence what streets feel like for people. For example, active frontages at ground floor level; shade, shelter and lighting designed into building façades; careful thought about how people can easily access the building on foot, bicycle and public transport.

01 With a successful Healthy Streets Approach, children need not to wear high-visibility clothing to ensure their safety while walking on the streets.

02 People of all ages cycle along the streets of London during the annual RideLondon cycling event.

“Cities become more interesting and pleasant places to live, work and get around when they are not car-dominated.”





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We also need to think beyond the individual street. For example, a bicycle lane that only runs for one block will not result in more people cycling because they need a safe space to cycle their whole journey. A network of high-quality public transport services, bicycle lanes and wide footpaths are essential. Roads need to dedicate more space for sustainable, healthy modes of travel, so that it is quicker and more convenient than travelling by car for short journeys. This can require area or city-wide policies that limit vehicle speeds, enforce bus lanes and charge people more for driving short journeys.

This brings us to the most strategic level of consideration for delivering improvements in the 10 Healthy Street Indicators: spatial planning. To ensure cities are thriving places for people to lead healthy lives free from congestion and pollution, we have to plan for that spatially. People need to be able to easily access the goods and services they need routinely in their own neighbourhood, on foot or by bicycle. This means ensuring that new developments bring everyday services such

as shops, restaurants, leisure, schools, dentists and doctors into communities. These “20-min towns” have to restrict car parking, as people will not walk or cycle in their neighbourhoods if there are ample opportunities to park a private car.

Even people who are not interested in their health and well-being can still enjoy the benefits of Healthy Streets in other ways. Cities become more interesting and pleasant places to live, work and get around when they are not car-dominated.

For example, businesses in London’s financial district can see that it is important to be based in a great place for people if they are seeking to attract top-level talent from around the world. In May 2019, the City of London adopted an ambitious plan based on the Healthy Street Indicators. This includes reducing the speed limit to 24 km/h, increasing the number of streets closed to cars, building 2-m wide cycle tracks and tightening junctions to make them easier and safer to cross on foot or by bike.

02

The Greater London Authority has comprehensively adopted the Healthy Streets Approach across all departmental strategies, committed £2.3 billion (\$\$4.03 billion) to delivering the necessary improvements, embedded Healthy Streets in the spatial plan for the city region and is annually tracking its progress in improving the indicators. Data is already showing record growth in cycling and the Healthy Streets scores for streets across the city are climbing. It is therefore possible for cities to apply urban transport policies that achieve the pace and scale of change needed for real population-wide benefits.

In 2019, Auckland Transport in New Zealand hired a Healthy Streets team to help the city apply the approach there, and in October 2019, Hungary’s capital city Budapest voted in a new mayor who has committed to the approach.

“Active travel needs to be a more convenient and attractive alternative.”

The 10 Healthy Street Indicators are deceptively simple. To achieve our objective, we need a wide range of organisations, businesses, government departments and individuals to work together towards this shared goal. Using the 10 Healthy Street Indicators, they remain focused on improving the human experience to deliver health and well-being benefits for everyone. ○

- 01 People enjoying the outdoor seating spaces on a busy street near Leicester Square, London.
- 02 Commuters using the newly installed protected bike lanes in central London.



ESSAY

Sport in the City

Living Better Through Sport

In Singapore, sport is more than child's play. To tackle many of the city's health and demographic challenges, promoting sport and physical activity is key. This article explains how providing the necessary sport facilities and empowering the community to exercise helps society to stay in good shape.

Cities today face a variety of challenges, including rising healthcare costs, an ageing population, social tensions and economic uncertainties brought about by geopolitical tensions. Singapore is not immune to these challenges.

Singapore in particular faces the challenge of a rapidly ageing population, where one in four Singaporeans will be aged 65 and above by 2030, double of what it is today. Singapore's annual healthcare expenditure over the next

decade is projected to be approximately 3% of GDP, overtaking spending on education. The country's healthcare costs will also rise at a rate faster than that of its neighbours. On the other hand, while various races and religions coexist in harmony in Singapore, forces that threaten to pull communities apart are still present.

While sport might not be the immediate answer that comes to mind, how can we use it to improve Singaporeans' lives?



Lim Teck Yin is the Chief Executive Officer of Sport Singapore.



With Sport Singapore's Sports Facilities Master Plan, sports and play spaces are just a short walk away from people's homes.



01

Activating Sport for Health & Well-being

With an ageing population, sport can inspire everyone to stay active and healthy, which can reduce the healthcare burden on the working population. Every 10,000 Singaporeans who stay active can translate to S\$2.3 million in healthcare savings and an increase in the number of healthy years lived, according to Active Citizens Worldwide (ACW). Sport can also encourage seniors to be socially active, reduce their risk of social isolation and help communities build resilience.

Sport Singapore (SportSG) is a local government agency that promotes sport in the country. Its purpose is to transform Singapore through sport. It envisages a Singapore where active living is the norm and citizens are motivated to stay healthy with their family, friends and community, regardless of life stage. This is done using three approaches: organising programmes to promote sport, developing infrastructure and facilities to encourage active lifestyles, and empowering the community.

Promoting Sport through Programmes

ActiveSG is SportSG's national movement that brings people together in sport and physical activity. ActiveSG membership is complimentary and open to all Singaporeans and Permanent Residents. New members receive free credits that can be used to enter swimming pools and gyms, book sport facilities and pay for sport programmes.

ActiveSG members can participate in a range of sporting and lifestyle programmes that cater to all ages and abilities. At ActiveSG swimming pools, morning pool walks help seniors build water confidence before they progress to other activities like aqua-aerobics. Some ActiveSG gyms hold senior-friendly programmes and have been retrofitted with resistance-training equipment that utilise air pressure instead of weights, reducing the risk of injury.

There are also free public programmes. For example, Yishun Swimming Complex holds hydro-health programmes such as



02

ballet-inspired exercises at its pool. Bishan Sport Centre holds circuit training sessions, kickboxing classes, and even yoga under the stars. Other sport centres offer trail walks, energy-bar making classes, night cycling sessions, and even dance parties.

Activating Infrastructure for Sport

SportSG's goal is for the majority of Singaporeans to have access to a sporting facility within a 10-min walk of their homes by 2030. The Sports Facilities Master Plan guides the development of sport spaces at the national, regional, town and neighbourhood levels. Regardless of scale and scope, all facilities allow people to live actively through sport, anytime, anywhere.

At the apex of sport facilities available is the Singapore Sports Hub, a fully integrated sport, entertainment and lifestyle hub. This

SportSG's goal is for the majority of Singaporeans to have access to a sporting facility within a 10-min walk of their homes by 2030.

0.35km² national facility consists of the National Stadium, Singapore Indoor Stadium, OCBC Aquatic Centre and OCBC Arena, Kallang Wave Mall and more. The National Stadium hosts sport events from regional competitions such as the Southeast Asian (SEA) Games in 2015 to community sport programmes for the public to gather and watch, cheer and bond over sport. The 100Plus Promenade running track that encircles the National Stadium is open for public use.

01 ActiveSG's programmes have encouraged seniors to get active and try new sports, like flippa ball.
 02 The Singapore Sports Hub hosts all types of activities, from elite sports to community events.



The Regional Sport Centres (RSCs) are focal points for sport programmes, events and activities for Singapore's five main regions (Central, East, Northeast, North and West). The first RSC, Our Tampines Hub (OTH) in the east, opened in August 2017. It brings together public facilities such as sport facilities, a library, a hawker centre, an arts theatre and dance studios under one roof. OTH exemplifies how co-location of facilities can help achieve broader planning objectives of space optimisation, intensification and integration. Residents visiting OTH can drop off their children for sporting programmes and then run family errands within the vicinity or participate in sport programmes themselves.

In July 2017, SportSG launched Active Health as a national movement for Singaporeans to take ownership of their health and well-being while building social bonds. SportSG also set up Active Health Labs (AHLs), which are immersive and experiential centres founded on exercise science. These complement the work of ActiveSG Sport Centres and integrated hubs to raise awareness of health and well-being using the four pillars of nutrition, physical exercise, sleep, and screen time. There are now eight AHLs located across Singapore. AHL@Admiralty Medical Centre, the first of its kind, is a collaboration with Yishun Health and part of a community medical facility in Kampung Admiralty, Singapore's first self-contained "retirement village".

Apart from establishing AHLs, SportSG has activated spaces for exercise across the island. The Sport-in-Precinct and Dual Use Scheme are key components of the Sports Facilities Master Plan. Under the Sport-in-Precinct scheme, sporting spaces are designed to be accessible and convenient for all. Multipurpose hard courts can be easily reconfigured for team sports like basketball, street soccer, badminton and sepak takraw. The exercise equipment available are also suitable for use by people of different ages

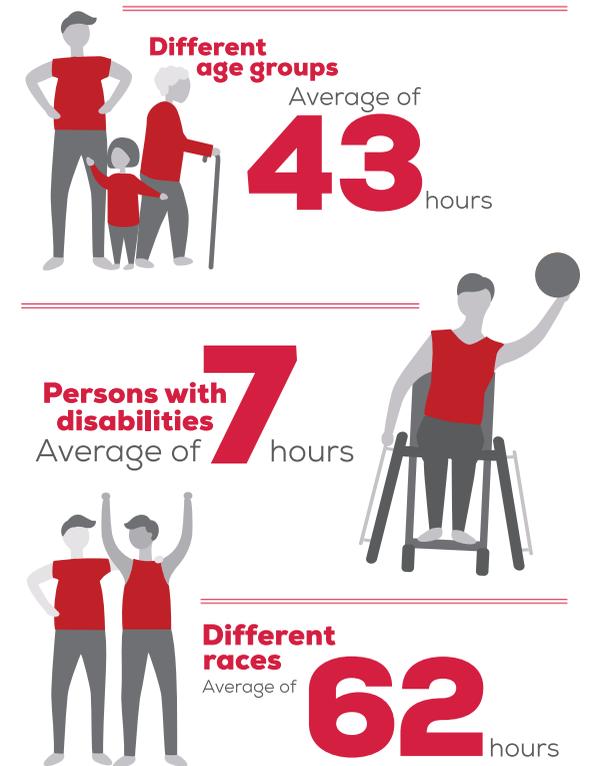
and abilities. Under the Dual Use Scheme, school sports facilities such as football fields and indoor halls are open for public use on weekday evenings and weekends. This has added more than 300 additional sports facilities to the public inventory.

Empowering the Community

In SportSG's engagements with Singaporeans, most expressed hope for a nation that values community bonds and provides equal opportunities for all. The ACW report reaffirms that sport brings people together and fosters social mixing. ActiveSG's Academies & Clubs (A&C) features a mix of traditional, new and lifestyle-oriented sport based on popularity, emerging trends, potential to deepen expertise in the sport, and ability to support lifelong sport participation.

03

Positive Social Contact Generated Through Sport



01 Active Health Champions guiding seniors in a workout.

02 Residents enjoying the Sport-in-Precinct facilities at Jurong Spring in Singapore.

03 Engaging in sport brings about a myriad of positive social outcomes.

“By organising programmes, planning infrastructure and empowering the community, SportSG promotes long-term sporting participation and social engagement.”

Beyond encouraging physical activity and supporting character and leadership development, A&Cs foster social interactions between participants from different ages and backgrounds. SportSG has also established platforms ancillary to A&C programmes for parents who want to support their children in their sporting journey. From football kickabouts and fitness boot camps to photography workshops, families can experience sport and create memories together.

“Members of the community have since joined Team Nila to bond with like-minded peers and give back to the community through sport volunteerism.”

Activating Sport as Strategy

Team Nila started out as SportSG volunteers for Singapore’s SEA Games and ASEAN Para Games participants. More members of the community have since joined Team Nila to bond with like-minded peers and give back to the community through sport volunteerism. There are five ways for volunteers to serve and participate.

Lord Sebastian Coe—Olympic medallist, former President of the Organising Committee for the Summer Olympic Games and President of the International Association of Athletics Federations—once shared that “sport is a universal language, building more bridges between people than anything else I can think of”.

For example, at the Woodlands Sport Centre, Team Nila regularly engages residents from the neighbourhood to participate in sporting activities. This includes water activities and the Sporting Friday initiative, where activities are organised on Friday evenings by both Team Nila and ActiveSG Sport Centre staff. Volunteers can also join interest groups like sport safety or sport photography to try new activities, hone their passions and bond with like-minded peers.

Sport can be the bridge that connects solutions to address urban issues related to a country’s social and healthcare priorities. By organising programmes, planning infrastructure and empowering the community, SportSG promotes long-term sporting participation and social engagement. This exposes people to new cultures and ideas, allowing them to appreciate each other’s contribution to society and strengthen community bonds. 🟡



01 Children enjoying a game of modified water polo with Team Nila volunteers.



CITY FOCUS

Kazan

A New State of Play



Women and children doing Zumba dancing along the beautiful Kazan riverbank.

Kazan, the capital of the Republic of Tatarstan, transformed from a city torn apart by gang violence to Russia's sporting hub. Now a champion for healthy lifestyles, green spaces and multi-cultural diversity, Kazan's miraculous revival offers many lessons for other cities.

Kazan was once a decaying city plagued by poor public health. Only one out of seven people, or 13.1% of its population, regularly participated in sport and recreational activities, and municipal schools had poor nutrition standards. As it moved to market capitalism in the 1990s, Kazan was mired in lawlessness and organised crime. Drug traders, shady businessmen and prostitution ruled the streets, while youth gangs engaged in aggressive turf wars. Faced with a deteriorating city, grim prospects, and a general cloud of pessimism, Kazan saw an exodus of young people and families in search of a better future.

Kazan Mayor Ilсур Metshin, who took office in 2006, was eager to rehabilitate the city's decaying image. Under his leadership, Kazan made incredible strides over just one decade to brand itself as Russia's sporting capital, while investing in health, green strategies and social programmes.

Modernisation Through Sport

Through sport—a prominent strategy in the city's policies—Kazan was given new life.

It embarked on the Healthy Kazan initiative, a major project under its social and economic development strategy, building over 30 new sport facilities and hosting the 2013 Summer Universiade.

“Through sport—a prominent strategy in the city's policies—Kazan was given new life.”

The event, which brought together 12,000 young athletes from 170 countries to compete in 26 sports, attracted US\$3 million (S\$4.04 million) in investment and generated 23,000 jobs, while raising Kazan's international profile. These funds were pivotal in upgrading the city's sport infrastructure and making sport attractive, convenient and affordable.

The city went on to host major sporting events like the FINA World Aquatic Championships in 2015, the FIFA Confederations Cup in 2017, and the 2018 FIFA World Cup. Kazan will also host the 2021 European Short Course Swimming Championships and the 2024 FINA European Swimming Championships.

Today, Kazan's 2,000 sport facilities—which range from stadiums, indoor ice arenas and playgrounds—cover almost all parts of the capital and are regularly used by some 30,000 of its citizens. The mayor's office is actively encouraging a lifelong love for sport. It organises annual hockey and football tournaments, which attract over 7,000 children and youth participants, and holds major ice hockey, triathlon and athletics events.



Kazan Arena is a key hosting venue for world-class sports events taking place in Kazan.



Children playing outdoors on a snowy day in Kazan.



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01

Giving Youth a Better Start in Life

Beyond sport, Kazan has made it a priority to improve school nutrition. It invested 950 million rubles (\$\$20.51 million) into modernising its food processing and production facilities, increasing hot meal coverage to 93% in 2015, up from 37% in 2005. From 2006 to 2015, the Department of Food and Social Catering delivered to students 300 million hot meals, 50 million of which were free for children from poor families.

The Kazan government also upgraded the city's youth clubs, offering free activities that have been crucial in pulling young people off the streets. Over 5,000 children, teens and young adults under 35 years old take part in activities at the city's youth clubs,

which include fencing, taekwondo, rhythmic gymnastics, modern dance, 3D modelling, robotics, intellectual games and hands-on classes. Kazan's Health and Development Foundation also launched a healthy youth lifestyle programme, and trained teachers to discuss topics like risky behaviour, HIV prevention, substance abuse, conflict and communication skills with teens.

Beautifying the City

The Kazan government also sought to improve the city's environment and boost its well-being and health. Lagging at 45th place in the ecological rating of the biggest Russian cities, Kazan had to shake off its drab industrial image—one choked with cars, air pollution and few green public spaces.

01 The opening of a pump track in Gorkinsko-Ometevsky Forest added new play areas for young riders.



02

The city's Environmental Council, along with socially responsible private and public enterprises, embarked on a massive makeover. The Green Record project—a mass planting of more than 150,000 trees—involved students, authorities, academics, public organisation representatives and more than 150 enterprises. The number of city parks and gardens more than doubled from 52 to 138 and park attendance increased tenfold as a result.

The concept of *blagoustroistvo* (the beautification of public services or infrastructure) was made a major priority for the wider Tatarstan region. Spearheaded by Natalia Fishman-Bekmambetova, who was appointed in 2015 as presidential

plenipotentiary for parks and public spaces at age 24, the city began taking citizen participation seriously and designed public spaces based on extensive public consultation. For instance, the public pavilion in the Gorkinsko-Ometevsky Forest was built with a large container box park offering co-working spaces for entrepreneurs and start-ups, play areas, cafes and a skating pavilion.

Kazan was also among the first cities in Russia to pioneer green building standards and brought in environmentally friendly buses that slashed harmful emissions. Within just five years, Kazan catapulted from 45th place to 7th place in Russia's environmental ranking of cities.

02 Playground in Gorkinsko-Ometevsky Forest for children to play in nature.

“Within just five years, Kazan catapulted from 45th place to 7th place in Russia’s environmental ranking of cities.”



01



02

Breathing New Life Back into Kazan

Today, its citizens and officials proudly call Kazan the “Third Capital of Russia”, a title granted by the Russian Patent Office in 2009.

From 2006 to 2018, the proportion of citizens actively participating in sports and recreation grew from less than 10% to 42%. Average life expectancy increased to 75 years, above the national average, while the mortality rate fell by 19%. In a signal of renewed confidence in the city’s future, the number of registered marriages has increased by 1.5 times, and there are 2.3 times more children born in Kazan today than in 2000.

In 2018, it was shortlisted for the Guangzhou International Award for Urban Innovation and earned a special mention for the Lee Kuan Yew World City

“From 2006 to 2018, the proportion of citizens actively participating in sports and recreation grew from less than 10% to 42%.”

Prize in the same year. In November 2019, the city was recognised by the Financial University under the Government of the Russian Federation as having the best living standards in the country.

“The infrastructure solutions are changing the life of cities. At the same time, people also change—they begin to believe in themselves and in tomorrow,” Mayor Metshin said about the city’s development. ○

- 01 Citizens of all ages enjoy the picturesque Kolomenskoye Kazan Garden.
- 02 Mass sports events like marathons have become commonplace in Kazan.



CASE STUDY

Toyama | Compact City

A Return to Vitality

Cities approaching population decline and rapid ageing can look to Toyama, a pioneer in tackling these challenges, for solutions. Under its holistic compact city policy, Toyama invested in public transport, created a walkable and vibrant city, and implemented ageing policies that encourage healthy, sociable seniors.

The Challenge

When Masashi Mori was elected mayor of Toyama in 2005, he was confronted with the herculean task of managing urban sprawl and an ageing population in the coastal city located on Japan's main island of Honshu.

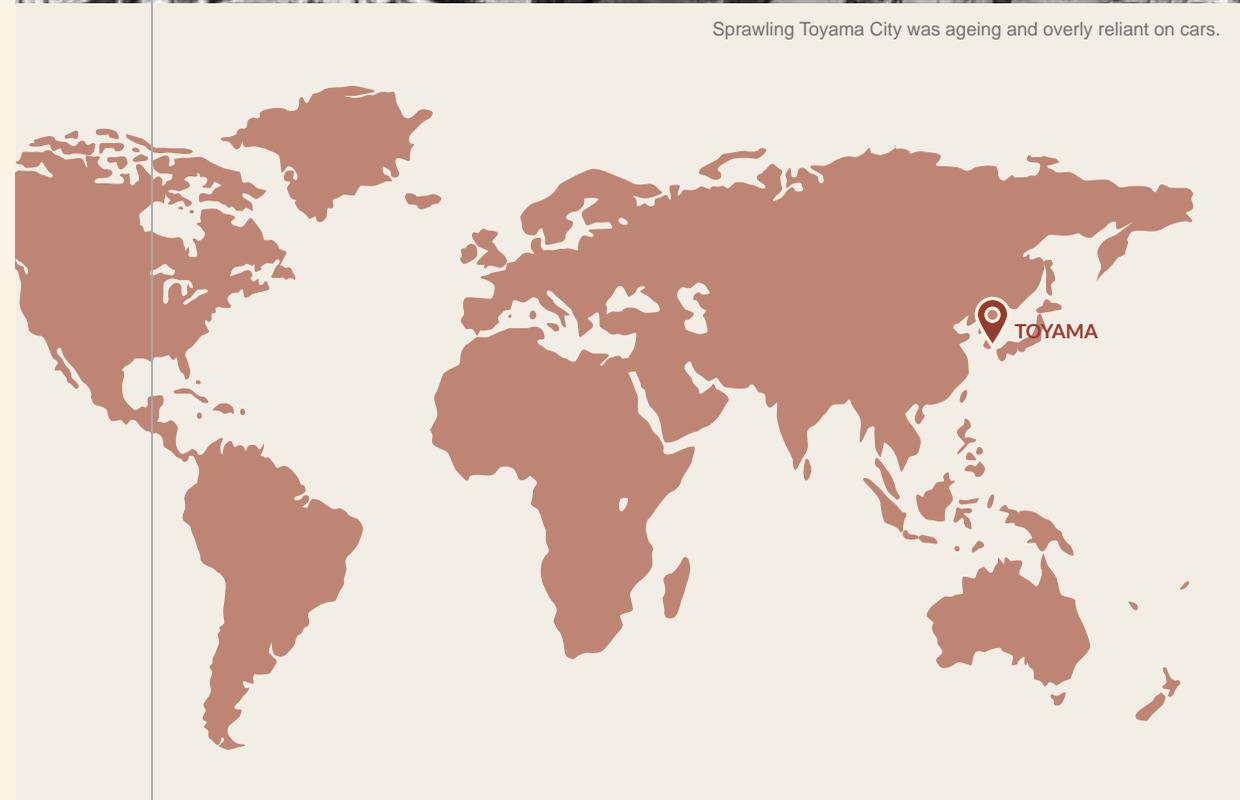
Young people were leaving the urban city centre for more affordable suburbs, creating the phenomenon of *akiya* (vacant homes). The city was also suffering from a shrinking population caused by persistent low birth rates and high life expectancy. If left unaddressed, 30% of its population would comprise senior citizens by 2030.

The city's car-dependent nature—Toyama had the second-highest car ownership rate in Japan in 2009—also eroded public transport services. The high reliance on cars and scattered city structure led to an overall 15.7% jump in carbon dioxide emissions between 1990 and 2005 across industry, households, business and transport divisions.

Mayor Mori and his team had to act fast to prevent the city's decline. The Compact City Strategy, unveiled in 2008, aimed to revamp Toyama's public transport system and bring life back to the city centre.



Sprawling Toyama City was ageing and overly reliant on cars.



Toh Ee Ming is a freelance journalist who contributes to the South China Morning Post and the Xinhua News Agency, covering society, politics and culture.

The Solution

Toyama's goal was to become a "city of short distances", which would be achieved by building a resilient infrastructure network to allow citizens to easily shuttle between the city centre, suburbs and rural areas.

Crucial to this strategy was the city's tram network, which opened in 2006. Under the plan, its route was extended to circulate the city centre. The project was a huge success,

with the network carrying some 4,900 passengers daily—above the projected 3,400 passengers—and reduced greenhouse gas emissions. The city's population was engaged throughout the process. Over 120 regional town meetings were held, as Mayor Mori explained the rationale of the strategy to residents to gain their support. The city also raised funds from locals and businesses to improve and maintain the tram network.

To entice citizens back to the city centre, Toyama carved out specific residential zones, providing each one with essential services like supermarkets, schools and hospitals. Public transport services to these districts were also improved to boost connectivity, with subsidies offered to those who moved into the city centre or the residential zones. In a move to beautify its trams and inner city, Mayor Mori introduced free travel on public transport to anyone carrying a bouquet of flowers. The city also partnered with French advertising giant JCDecaux to introduce a city-wide bicycle sharing system.

Toyama introduced ageing policies that encouraged senior to lead active and independent lives, while making the city more accessible and senior-friendly. With a special travel pass, seniors can travel in and out of the city via tram for 100 yen (S\$1.25), and grandparents and their grandchildren receive free entry to museums, zoos and other attractions. This led to a 13% increase in city facility use from 2011 to 2013. The city was also revitalised with more older people socialising outdoors. To encourage its seniors to walk more, Toyama launched the Let's Walk programme, where leaders take groups of seniors on long walks throughout the city and the countryside.

Toyama also has unique preventive care and advanced care facilities geared at keeping its seniors in tip-top health, to curb the costs of increased long-term nursing care and lessen the burden on future generations. For example, at Kadokawa Care Prevention Centre, the city's first fitness and rehab facility for

“Over 120 regional town meetings were held, as Mayor Mori explained the rationale of the strategy to residents to gain their support.”

seniors, seniors can engage in strength training, gymnastics, enjoy steam baths and even try water aerobics in an onsen. Meanwhile, Toyama's integrated daycare centres like Konoyubi Tomare cater to the elderly, young people and special needs individuals all in one facility, offering daycare services, short stays, job training and recreational activities. As of 2016, Toyama had 47 of such facilities.

The private sector is also trying to cater to an ageing population. Toyama's supermarkets have dedicated more spaces for adult diapers and ready-made meals that can be easily chewed, while convenience chain stores like Lawson provide comfortable seating areas, blood pressure monitors and counselling services for seniors. Malls like Aeon offer affordable food for seniors, organise special events and train staff to recognise dementia symptoms. Supermarkets have also introduced mobile services to remote neighbourhoods, giving elderly living in these areas access to household products and fresh food. Technology was also used to improve the lives of seniors, and initiatives include robot companions in retirement homes, to sensors that keep a close eye on elderly living alone.



The Outcome

Thanks to Mayor Mori's "all carrots, no sticks" approach, Toyama's long-term vision, strong partnership among city stakeholders and introduction of creative solutions, the city has successfully reversed the trend of the urban centre hollowing out and created Japan's most accessible and senior-friendly city. Between 2005 and 2017, the share of residents living in the city centre and other designated residential zones grew from 28% to 38.6%. The city aims to hit 42% by 2024, and is working on additional measures such as subsidised housing construction for those living within 500 m of tram stations.

Mayor Mori is also proud of how the city promotes strong face-to-face interaction: 99% of all residents live within a 2-km radius of a branch office of city hall, while 88% live near a social services provider—more than any other Japanese city. Toyama has managed to maintain a high quality of life despite its high density. Toyama's Grand Plaza, an open space with a large glass roof at the heart of the city's commercial district, is now a focal gathering point that hosts over 100 events annually. The city also has the highest level

of participation in senior citizen's clubs in the country—42.5%, compared to the national average of 14.4%, according to the Ministry of Health, Labour and Welfare.

Its compact city efforts have garnered strong interest from other Japanese and global cities. In 2008, Toyama was designated an Environmental Model City by the Japanese government, and in 2012, it was among the first cities worldwide to be recognised by the OECD for its compact city policies.

More significantly, in 2017, Toyama was the first Japanese city to make the Rockefeller Foundation's global list of 100 Resilient Cities, alongside Barcelona, Los Angeles and Sydney.

Under Resilient Toyama, a comprehensive strategic roadmap to promote city resilience, its vision for 2050 is just as ambitious and far-sighted. Toyama continues to aim to be a vibrant city of innovation that promotes high-quality, environmentally friendly living with strong community bonds. ●

“The city has successfully reversed the trend of the urban centre hollowing out and created Japan's most accessible and senior-friendly city.”





CASE STUDY

Singapore | HortPark

At Play in Nature

Play serves an important function in a child’s development. Nature also has positive effects on our mental well-being. With these in mind, the National Parks Board designed the Nature Playgarden at HortPark to tap the power of both play and nature to improve the growth and health of children.

The Opportunity

In the past few decades, research studies have shown that young children learn better through play. Outdoor play, in particular, has been associated with helping children learn better in all domains. The development of their cognitive, social-emotional, language or motor skills is enhanced when they play in a natural setting. There is also evidence of the therapeutic value of nature, including faster healing and pain alleviation in surgery patients, improved concentration in children with attention deficit hyperactivity disorder, and improved immunity, stress reduction and better emotional well-being in children and adults. Supporting these findings is the concept of biophilia. Defined as the innate affinity of humans for nature

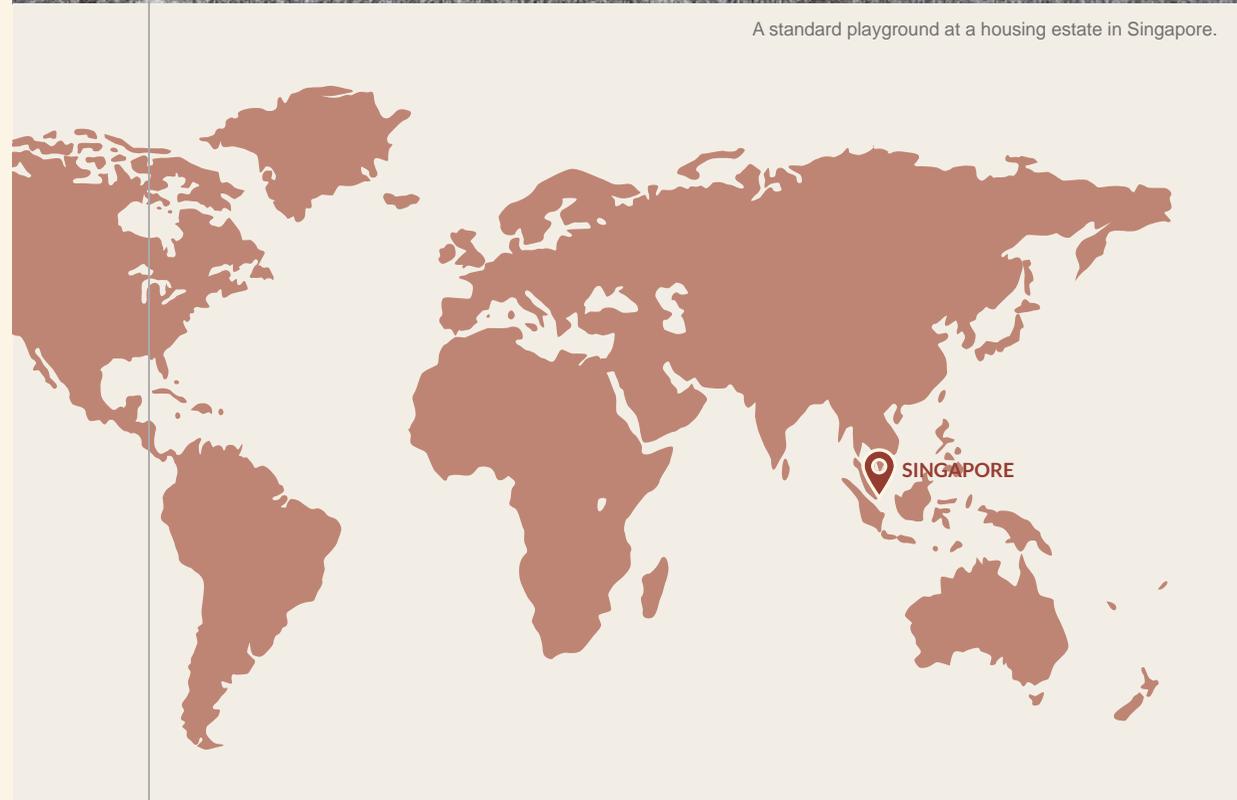
“Outdoor play has been associated with helping children learn better in all domains.”

and living things, biophilia explains why people feel happier when they are in a natural environment.

Singapore already has an extensive green network, and playgrounds are a common feature in the country’s parks and gardens. However, these playgrounds are usually made of plastic, metal and rubber and characterised by standardised equipment that directs the play activities of children.



A standard playground at a housing estate in Singapore.



Valerie Chew is an adjunct editor for the Centre for Liveable Cities.



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The Initiative

Keen to tap deeper into the nature-human connection, the National Parks Board (NParks) opened the Nature Playgarden at HortPark in March 2019. This biophilic and naturalised playground encourages children to explore, discover and appreciate nature. Created specifically for children aged 3 to 6 years old, it allows direct connections to nature through seeing, touching, hearing and smelling natural elements, providing both larger areas that convey feelings of spaciousness as well as smaller spaces that serve as a shelter and create a sense of risk and mystery.

The 0.35-ha (3,500 m²) playgarden is lit entirely by sunlight and the ground is covered with sand, gravel, wood chips, soil and grass instead of rubberised safety flooring. About 99% of the playgarden is made from recycled natural materials, with the steel used in a tunnel forming the remaining 1%. Though reinforced with steel to prevent it from caving in, the tunnel has an outer layer of wood to make it look natural.

The playgarden utilises the location's uneven terrain and is set amid abundant greenery. As children play, their senses would be stimulated not only by what they see and touch but also by the sounds and smells of nature in their surroundings. They would also be able to observe the animals inhabiting the area, including the Straw-headed Bulbul and the Common Parasol dragonfly. The playgarden's

play features were designed to encourage children to play freely with nature, with plenty of room for them to run around, exercise their motor skills and challenge themselves physically. Children can also play imaginatively and creatively with natural materials such as pebbles, sticks and dried leaves found around the playgarden.

01 An overview of HortPark's layout.

02 At The Stream, children interact with water as it flows through a series of channels carved from logs and observe how different materials float or sink in the water.

02

“As children play, they also build skills and improve their well-being.”



02

The Outcome

The Nature Playgarden provides children with an immersive, multi-sensory experience of playing freely amid nature using whatever nature provides. Here, children interact with their surroundings spontaneously in their own way, without external direction. The playgarden also allows children to reap the mental health benefits of spending time in nature, such as reduced stress and improved mood. As children play, they also build skills and improve their well-being.

Teachers and parents have given the playgarden positive reviews, and NParks is now working to create more nature playgardens in Singapore. Using the Nature Playgarden as a test site, NParks is gathering information that will be used to develop guidelines as part of its Biophilic Playgarden Plan, which aims to encourage preschool-aged children to spend more time outdoors in nature. To be completed by early 2020, the

“Here, children interact with their surroundings spontaneously in their own way, without external direction.”

guidelines will help preschools, private developers and government agencies design nature playgardens.

NParks plans to build new nature playgardens in other parks and gardens over the next two years, including at the Gallop extension of the Singapore Botanic Gardens. It will also be enhancing existing playgrounds with biophilic design features. With more nature playgardens across Singapore, NParks hopes that children across the island will develop a lifelong love for nature and grow up healthier and happier. ○

01 At The Singing Seeds, children explore the sounds made by hanging bamboo poles of various sizes, which create different pitched chimes as the children move them.

02 Children crawl or climb over the logs as they make their way across The Log Valley and rest in a bamboo grove at The Secret Den.



CASE STUDY

Vancouver | Cycling Infrastructure

Cycling as a Way of Life

On its route to achieving bike-friendly status, Vancouver has successfully dealt with challenges such as bikelash and climate change. Its secret? An inclusive design blueprint catering to all ages and abilities, known as “Triple A”.

The Challenge

In 1996, the Vancouver City Council proposed to convert one of the car lanes along Burrard Bridge into a bike lane. What was intended as a six-month trial lasted only a week.

Marked by just traffic cones and police tape, the lane did not inspire confidence as a safety barrier. Traffic clogged the roads upon the lane’s opening, providing additional fodder for bikelash—hostility towards cyclists due to the increased presence of bicycles on streets.

The increasing popularity of cycling meant that the safety of both cyclists and motorists had become a crucial issue for the city. In 2005, another proposal for a separated bike lane along Burrard Bridge

“The increasing popularity of cycling meant that the safety of both cyclists and motorists had become a crucial issue for the city.”

made its way to the city council and was rejected for fear of a repeat of the negative public reaction of 1996.

At the same time, reducing car emissions was becoming a bigger issue because of the increasing awareness of climate change. For policymakers, this posed a challenge and an opportunity: accounting for the health of residents as well as the environment.



Cyclists participating in the June 2007 Critical Mass bike ride in Vancouver to promote safe urban bike use and push for more bike lanes.



Simon Vincent is a content strategist at editorial consultancy Tuber Productions.



01

The Solution

In 2008, Burrard Bridge became the focus of attention again, when then-Mayor Gregor Robertson proposed replacing a car lane with a protected bike lane. Critics predicted this would lead to traffic congestion and public unhappiness.

These fears did not materialise when the bike lane officially opened in 2009. There was smooth traffic flow and no significant incidents of bikelash. Tracing the evolution of the bridge, urban media outlet CityLab attributed its success to a “smarter bike lane plan”.

Instead of closing an inbound car lane or two like in previous proposals, the new plan converted a single outbound car lane into a bike lane. Mayor Robertson’s plan also turned one of the two pedestrian lanes on each side of the bridge into a bike lane, meaning that remaining foot traffic converged into one lane. A sturdy barricade, instead of cones, separated cyclists from motorists and pedestrians.

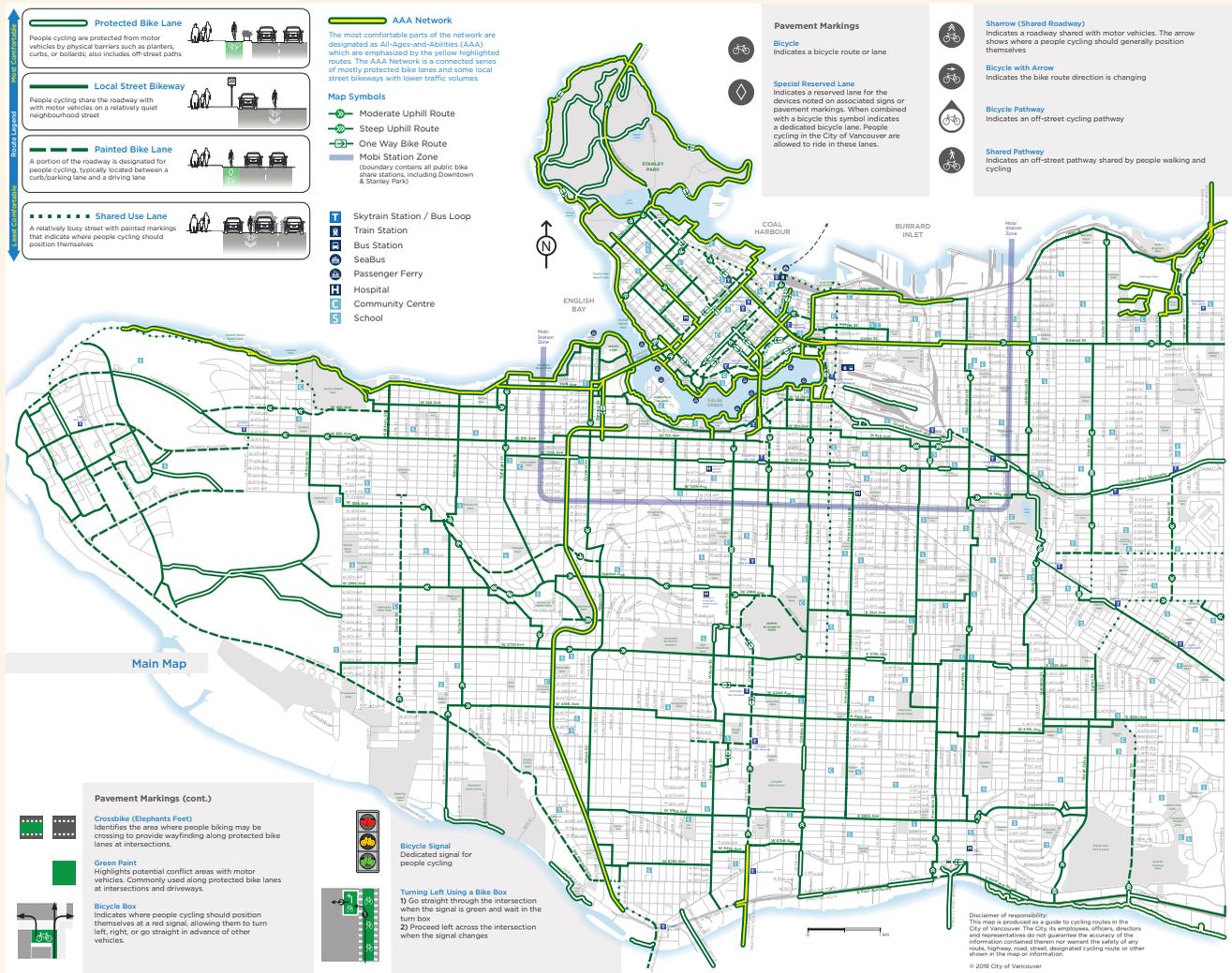
Nevertheless, the city had to deal with unforeseen issues, such as cars getting

in the way of cyclists at an intersection connecting to the downtown core. In 2017, the city reworked the intersection as part of a C\$35 million (S\$36.5 million) upgrade.

These infrastructure changes have proceeded in tandem with the city’s “all ages and abilities” design principle, also known as “Triple A”. This means making cycling safe and convenient for everyone, from children to seniors.

Traditional cycling facilities, like shared use lanes on major streets, tend to appeal to people who are comfortable travelling in traffic. However, as noted in the city’s official design guidelines from 2017, “bikeways on quiet streets, protected bike lanes and off-street pathways appeal to people who are interested in cycling but concerned for their safety”.

01 On Burrard Bridge, a barricaded bike lane was installed to separate traffic and protect the safety of pedestrians, cyclists and motorists.



01

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The guidelines also note the usefulness of landscaping and urban design elements as “traffic calming measures”. This connects with the other aspect of Vancouver’s cycling plan: sustainability.

In 2011, Vancouver launched its Greenest City Action Plan to create “compact neighborhoods with higher density to provide easy access to work, shopping and recreation”, making it easier to do away with cars. The city introduced natural elements along the streets to create a pleasant and inviting cycling experience for cyclists. For instance, streets were built with

integrated rainwater management systems for growing trees. Rain gardens were constructed to collect run-off from surrounding streets along 63rd Avenue and Yukon Street Plaza.

Explaining the thinking behind this, the city’s green infrastructure planner Cameron Owen told the Sightline Institute: “We want to make it so that every time we build a street [or] add a bike lane...we look for the opportunity to put in a rain garden, tree trench or structural soils that collect water and support tree growth.”

01 The City of Vancouver provides an annual cycling and guiding map that details all bikeways and greenways for people of all ages and abilities.

Together with these policy changes, non-government actors have also done their part to promote cycling as a healthy and sustainable mode of transportation. In 2007, Mia Kohout, the editor of cycling publication *Momentum Mag*, launched Bike to Work Week.

The event, advocating for residents to cycle to work, attracted over 1,000 new cyclists in its inaugural year, according to community newspaper *Vancouver Courier*. It has since become a popular annual event for businesses to show their support for cycling culture and infrastructure.

“The city introduced natural elements along the streets to create a pleasant and inviting cycling experience for cyclists.”

02 Cyclists riding on the dedicated bike lanes, which help to reduce road danger in Vancouver.



01

The Outcome

Today, Burrard Bridge sees more than one million bike crossings a year, and is one of the busiest bike lanes in North America.

Business leader and critic-turned-supporter of cycling Charles Gauthier told *CBC News* in 2019: “We couldn’t have predicted how popular cycling would become if you made it safer for people.”

Cycling initiatives have received added impetus since the city published the Climate Emergency Report in early 2019 to tackle climate change. The report builds

on the city’s ongoing transportation goals. One of Vancouver’s goals is for two-thirds of trips to be completed by active transportation by 2030. It is an ambitious but fitting aim considering that in 2017, three years ahead of a previous goal, 50% of trips in Vancouver were from active transportation.

For cities worried about bikelash when implementing transportation and sustainability initiatives, Vancouver has shown that designing for safety and inclusivity can make all the difference. ◉

“One of Vancouver’s goals is for two-thirds of trips to be completed by active transportation by 2030.”



02

- 01 The scenic Stanley Park offers cyclists an enjoyable cycling experience in downtown Vancouver.
- 02 The separated bike lanes along Dunsmuir Street allow riders to commute safely during rush hour.



CASE STUDY

Singapore | Kampung Admiralty

Ageing Well Together

At Kampung Admiralty, seniors can join a mass exercise, check on their health, and even play with their grandchildren—all at their doorstep.

The Challenge

Singapore is ageing. In 2015, some 1 in 8 Singaporeans were aged 65 or older. This proportion will double by 2030 when it is estimated to have over 900,000 seniors. An ageing population has implications for society, such as rising demand for healthcare and social services. Coupled with the trend of smaller nuclear families and more people staying single, more elderly households in Singapore may experience social isolation as they

struggle to live independently or are cut off from society.

In 2015, the city-state introduced the Action Plan for Successful Ageing to ensure Singapore remains an attractive place to grow old in, and where seniors can realise their fullest potential and are cared as integral members of society. Kampung Admiralty—Singapore's first retirement village—is a physical expression of this vision.

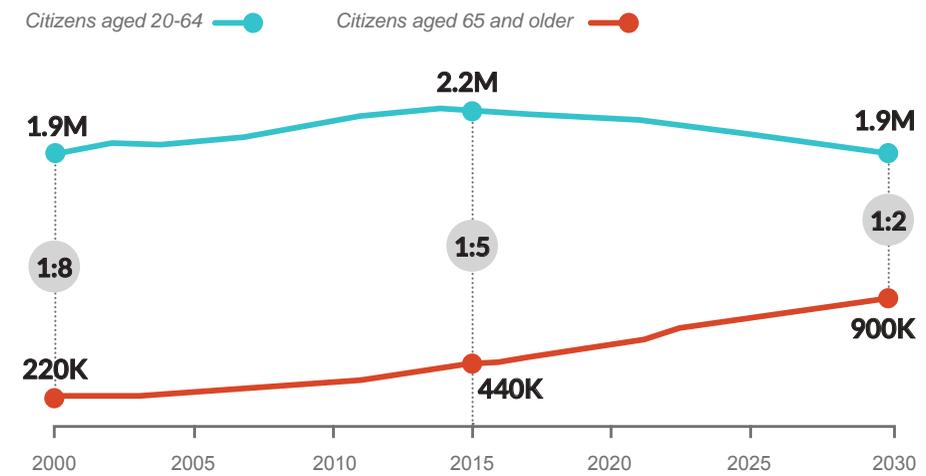


Justin Zhuang is a writer who sees the world through design.

Singapore feeling impact of rapidly ageing population

By Kelly NG

Number of working-age citizens has peaked



Source: National Population and Talent Division

TODAY

Number of Singapore's working-age citizens has peaked

Singapore has to quickly respond to the trend of an ageing population.



The Solution

Completed in 2017 by the Housing and Development Board (HDB) together with other public agencies, Kampung Admiralty combines public housing apartments with a wide variety of lifestyle services and public amenities in a single integrated development. These different functions are stacked one on top of another to create an 11-storey “vertical village” just for seniors.

The entire development is designed with the elderly in mind. Residents aged 55 and above live in two towers of studio apartments that sit atop Kampung Admiralty. The units are installed with senior-friendly features, including grab bars, slip-proof flooring, retractable clothes-drying racks in the kitchen and alarms to notify neighbours in an emergency. “Buddy benches” are also installed at the entrances of each unit to encourage residents to socialise.

Efforts to promote social bonding continue at a community garden below the apartment blocks. An Active Ageing Hub offers residents opportunities to interact through activities such as line dancing and a weekly cooking session that uses produce from the community garden. Next to the hub is a childcare centre that regularly organises activities for both generations to come together through storytelling and craft workshops. Unlike other hubs that charge a membership fee, the hub at Kampung Admiralty lets seniors participate in its activities for free if they volunteer for at least three hours a week. This could include helping the centre with care duties for frail seniors or organising activities for fellow retirees.

To encourage residents to be active, Kampung Admiralty incorporates a range of services in the development, including a two-storey medical centre, a supermarket, cafes and other retail stores. A Community Plaza on the ground floor allows for mass exercises, bazaars and cultural events. It also connects to an MRT station, inviting the public into the development to enjoy spaces such as its 900-seat food court on the second floor.

In these ways, Kampung Admiralty attracts the entire neighbourhood to make it lively for all. “Kampung Admiralty shows that co-locating multiple uses that everyone needs...makes life easier for the whole neighbourhood. But what makes them want to stay and spend time together, share a meal, participate in activities and get to know new friends is that the building is open, friendly, comfortable, accessible and very green. The convenience draws people in, and the atmosphere makes people want to stay,” shares Wong Mun Summ, co-founder of WOHA, the architectural firm that designed the development.

“An Active Ageing Hub offers residents opportunities to interact through activities such as line dancing and a weekly cooking session.”



01



02

01 Two towers of studio apartments have been set aside for older residents in Kampung Admiralty.

02 Intergenerational programmes provide opportunities for the young and old to interact.

“The entire development is designed with the elderly in mind.”

The Outcome

Since the first residents moved in two years ago, Kampung Admiralty has proved to be a model for ageing-in-place. According to a survey of 46 senior residents, their quality of life—in terms of finding meaning or feeling empowered—has improved by 8%.

One reason may be the many activities organised by the development’s Active Ageing Hub. According to the director of the hub, 1 in 5 residents take part in its activities. For retiree Poo Chee Chiang and his wife, the hub has even become like a second home as they spend up to five days a week there. He told LabourBeat, a website on workers in Singapore: “There is a big group of people here...with a lot of energy. If we were to do things on our own, it becomes easy to lose interest.”

The hub has also boosted the health of nearby residents like Linda Ng. Through activities in the hub, she learnt how to eat healthily, exercises more and is no longer cooped up at home.

She told *TODAY* newspaper: “My life has changed...Now I’ve lost 8 kg and my doctor said it was a miracle that my diabetes got so much better.”

Kampung Admiralty’s integrated approach to caring for seniors has also impressed those from overseas. In 2018, the World Architecture Festival named it the Building of the Year because the jury felt it offered lessons for cities and countries around the world. In a statement, the award’s programme director, Paul Finch, said the project was admirable for how it “dealt with the universal condition of longevity and health treatments, social housing provision, and commercial space, which enabled substantial public realm benefits”.

But the best endorsement has come from Singapore’s commitment to develop and replicate the model across the country. By 2026, a similar retirement village will be built in the neighbourhood of Yew Tee, and more are expected to follow. 



01 Kampung Admiralty’s community plaza is a vibrant place that draws people together.

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