

Health Executives in Asia Leaders (HEAL)

Health-Promoting Cities



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Introduction to the HEAL Programme

The Healthcare Executive in Asia Leaders (HEAL) Programme was a series of four webinars and four workshops hosted by the Saw Swee Hock School of Public Health at the National University of Singapore from March to August 2021. The programme was supported by Temasek Foundation, in partnership with The American Chamber of Commerce in Singapore.

The importance for managers and leaders, including those in non-health professions, to understand how health issues impact society and business and vice versa is increasingly becoming apparent, particularly in light of the COVID-19 experience. The HEAL programme aimed to equip managers and executives in leadership capacities in all sectors to effectively understand and navigate modern health challenges and to develop an ability to integrate health considerations into their decision making. It is timely to address some aspects of this complex interrelation, and each of the four webinars/workshops examined one specific topic under this lens with a focus on the experience in Southeast Asia, and Asia more broadly.

Throughout this series, and in particular through the workshops, participants discussed topics of relevance within the broad areas of precision public health, food and nutrition, healthy cities, and commercial determinants of health, and related the discussion to their own countries and professional sectors. Guest speakers also shared their expertise and provided their perspectives. One of the outcomes of the series was to build a multi-sectoral cohort of like-minded professionals who can support each other in developing their understanding of public and global health.

Health-Promoting Cities

In this topic, participants explore how the social, natural, and built environment of cities and metropolitan areas can influence health and wellbeing of the population. The event details and speakers were as follows:

Webinar

Tue, 27 April 2021
4:00-5:30pm (SGT)

Speakers

- **Assoc Prof Jason Lee Kai Wei**
Research Associate Professor, *Department of Physiology, NUS Yong Loo Lin School of Medicine*
- **Dr Nick Petrunoff**
Research Fellow, *NUS Saw Swee Hock School of Public Health*
- **Assistant Prof Seow Wei Jie**
Assistant Professor, *NUS Saw Swee Hock School of Public Health*
- **Ms Elaine Tan**
Deputy Director (Research), *Centre for Liveable Cities*

Moderated by

- **Assoc Prof Falk Müller-Riemenschneider**
Programme Leader (Physical Activity and Nutrition Determinants in Asia), *NUS Saw Swee Hock School of Public Health*

Workshop

Thu, 15 July 2021
4:00-6:00pm (SGT)

Speaker

- **Dr Agis Tsouros**
International Adviser Health Policy and Strategy, *World Health Organization (WHO)*

Facilitated by

- **Assoc Prof Jeremy Lin**
Director, Leadership Institute for Global Health Transformation (LIGHT), *NUS Saw Swee Hock School of Public Health*

Executive Summary

This report will highlight some of the key learnings from these discussions, which centred on three broad sections:

1. **Singapore: Case Study of a Livable City.** This section provides an overview of the governing frameworks, approaches, and strategies Singapore adopts to continuously improve the liveability of the city-state.
2. **Designing Active and Sustainable Cities.** More green spaces, walking paths, and cycling paths are introduced to promote physical activity and achieve more sustainable, car-lite cities.
3. **Other Important Factors Affecting Health in Cities.** Heat and air pollution have detrimental effects on human health. Ongoing research will help society better understand ways to improve thermal comfort and reduce air pollution, to achieve higher productivity and overall wellbeing.

Introduction to Health-Promoting Cities

Across the world, urbanisation has continuously increased and, together with population ageing, represents the most important demographic transition of our time. The transition from living in rural to highly urbanised environments is especially evident in Asia, and was met with a consecutive shift from agricultural to service-based economies and from poor to rich income societies.

As stated in the Ottawa Charter on Health Promotion, "Health is created and lived by people within the settings of their everyday life; where they learn, work, play, and love." It goes beyond the absence of disease to include physical, mental, spiritual, and emotional facets of health and the promotion of equity. Cities and metropolitan areas can influence the health and wellbeing of a population. Healthy living and behaviours all can be shaped by the social and urban environment. These population health outcomes can be met through long-term thinking and planning around integration of various urban systems. Proper sanitation, access to good quality drinking water, food security, clean air and robust healthcare and transport systems are vital to build a resilient community. A good balance of green and blue spaces also helps to promote mental well-being and active lifestyles.

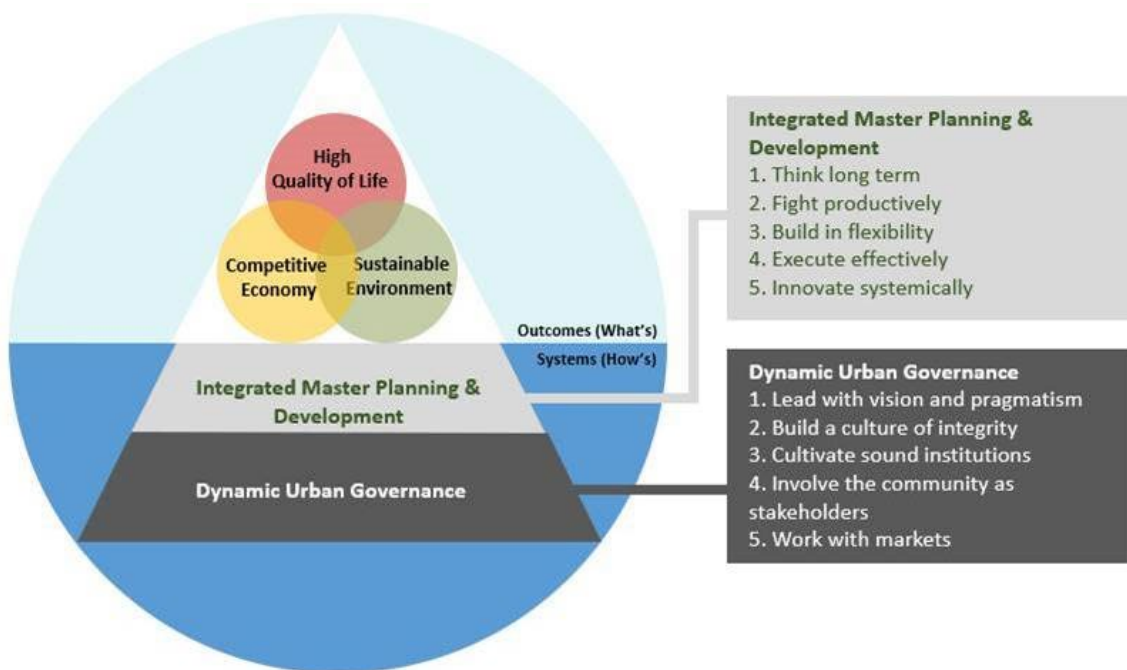
Future-ready cities are important for ensuring a good quality of life, building resilience in the time of disruptions such as the COVID-19 pandemic, and attaining the 11th Sustainable Development Goal (SDG) which revolves around sustainable cities and communities.

Acronyms and Abbreviations

HDB	Housing and Development Board, Singapore
LTA	Land Transport Authority, Singapore
NParks	National Parks Board, Singapore
PM _{2.5}	Particulate matter <2.5µm / fine particulate matter
PSI	Pollutant Standards Index
SDG	Sustainable Development Goal
URA	Urban Redevelopment Authority, Singapore

1. Singapore: Case Study of a Liveable City

Despite a large increase in population since her independence, Singapore is consistently ranked as one of the most liveable cities globally. Today, all of Singapore has access to modern sanitation, clean water, and electricity. Consequently, public health has also improved significantly – the average life expectancy has increased from 64 years in the 1960s to 84 years today. To achieve this, the government has planned for long-term strategies illustrated in the Singapore Liveability Framework below:



The Singapore Liveability Framework (Centre for Liveable Cities Singapore)

Besides the framework above, the government also adopts a health systems lens and a comprehensive Urban Systems Approach comprising transport, waste, housing, water, industry, and greenery. This fosters interministerial collaboration to achieve liveability and health outcomes.

With these in place, the Integrated Master Plan with three key levels was developed. Firstly, the Concept Plan serves as the blueprint setting out the strategic growth direction and land use needs in the long-term. Secondly, the Detailed Master Plan guides Singapore's land use and development in the medium term. Finally, Development Plans detail development parameters for every piece of land.

Below are the six strategies Singapore adopts to develop a liveable and healthy city:

1. Planning for Polycentric Centres

- In the past, this helped overcome the initial challenges of resettling occupants from slums to good quality housing with clean drinking water and proper sanitation, thereby improving public health.
- Decentralisation allows for jobs and amenities to be closer to housing neighbourhoods and therefore reduces land development pressures in the city centre.

2. Creation of Self-sufficient Housing Towns in a High-density Context

- At present, about 80% of Singapore's population is housed in HDBs (public housing). Each HDB town has a neighbourhood centre serving its residents. These serve as one-stop integrated community and lifestyle hubs with a comprehensive suite of facilities and services, and public transport nodes.
- In October 2020, HDB unveiled its 'Designing for Life' roadmap, supported by three pillars: Live Well, Live Smart, Live Connected, which aims to promote health and wellbeing of residents from all walks of life.

3. Health as a Key Aspect of City Planning

- Singapore's healthcare system is organised into three integrated health clusters, each providing a full range of healthcare services from primary care, general hospitals, and community hospitals. This enables residents to access holistic and quality healthcare within proximity to their homes, which is especially important for Singapore's ageing population.

4. Green and Blue Spaces for All

- To promote healthy lifestyles, accessible green and blue spaces such as parks and waterways are also planned for. These were kept open during the COVID-19 Circuit Breaker lockdown in 2020, with social distancing measures in place, to enable residents to continue their physical activity and maintain their physical and mental wellbeing.
- Innovative ways of injecting greenery into the urban environment, for example pocket parks, vertical greenery and green roofs, have also been explored since URA's Landscaping for Urban Spaces and High-Rises (LUSH) programme started in 2009.
- The target is for 90% of Singaporeans to live within 400m of a park by 2030.

5. **Bringing the Community Onboard**

- There has also been a shift towards empowering the local community ('end users') to catalyse change in their respective neighbourhoods through participatory design processes. Such community-initiated efforts build community resilience, social capital and engagement within neighbourhoods, improving the physical, social and mental wellbeing of residents.

6. **Technology as an Enabler**

- Advancements in digital technologies are used to support the other strategies. This is evident during the COVID-19 period, where mobile devices are used for contact tracing and crowd control to curb the spread of the virus. Mobile tools with real-time visitor data, such as URA's [SpaceOut](#) and [Safe Distance @ NParks](#), also allow people to make informed decisions before going out.

2. Designing Active and Sustainable Cities

Singapore

In alignment with the UN's 11th SDG to "make cities and human settlements inclusive, safe, resilient and sustainable", the Singapore government announced the Green Plan 2030, a whole-of-nation movement to advance Singapore's national agenda on sustainable development. The Green Plan comprises five pillars that strengthen Singapore's commitments under UN's 2030 SDGs. This section focuses on two pillars: (1) City in Nature; and (3) Sustainable Living.

There is a global imperative to design physical activity into our everyday lives to improve human health and address climate change. In the past 50 years, there has been a global decline in all domains of physical activity and an increase in sedentary behaviour during waking hours. Several factors contribute to these trends: the shift from agriculture to manufacturing- or service-based economies, the mechanisation of occupations, increased car use (inactive travel) due to increased wealth, and the digitisation of work and play. Cities need to create natural opportunities for people to engage in physical activity, which can be done via improving accessibility to urban spaces and public transport networks. This will require intersectoral collaboration between the public sector, private sector, and civil society.

Active Urban Design: Cities in Nature

- Currently, 30% of households in Singapore have a park within a 10-minute walk via the walkable network. Singapore aims to extend this to all Singaporeans by 2030. To achieve this, works to intensify greenery and increase accessibility to public parks are underway.
- Intersectoral collaboration is also important in the urban design space. The [Parks and Health](#) project is one example where NUS Saw Swee Hock School of Public Health and NParks collaborate with various urban planners to investigate how parks contribute to overall health and wellbeing. The project found that higher park use and higher park PA time is significantly associated with better overall wellbeing, including mental health.
- A randomised controlled trial also found that participants who have been prescribed activity in parks by a health professional had significant increment in park use, physical activity and better psychological quality of life. This could inform future health interventions to promote physical activity in city-dwellers.

Active Mobility: Car-Lite Cities

- Active mobility is travel that involves physical activity, which can be built into everyday life. For example, walking and cycling, alone or in combination with public transport use.
- Among adults in Singapore, active travel represents 50% of all physical activity, as public transport represents 63% of travel mode share, a result of policies to make public transport system affordable and accessible, as well as restricting car ownership.
- The LTA and URA are continuing to extend the walking and cycling path network, which will triple by 2030.

Besides that, there is a need to be age-inclusive to cater to Singapore's ageing population. Developments such as [Kampung Admiralty](#), which integrates housing for the elderly with a wide range of amenities, and the upcoming assisted-living HDB flats for seniors in Bukit Batok are ways in which seniors can remain active.

In conclusion, considerable efforts are being made to create an active and sustainable Singapore. While policies are in place, whole-of-nation approaches are required to implement these plans. The next steps are then to develop systematic approaches to better understand physical activity and sedentary behaviour, as well as develop and rigorously evaluate strategies to create active and sustainable cities.

Challenges in Other Countries

- Some developing countries may face different challenges within their geographical boundaries, due to differences between and within rural and urban areas. For example, those in rural areas may have poor access to primary healthcare, city dwellers are exposed to poor air quality, and those in slums live in overcrowded conditions with poor sanitation. Interventions must be tailored to address different priorities in each geographical area.
- Many countries still have poor transportation and urban planning, where public transport is not accessible or reliable, or buildings are not energy efficient. Cycling in some areas could also be lethal or undesirable due to the heat or dangerous traffic conditions. Political willpower and creativity could help us find context-specific solutions for these.
- Access to parks is also inequitable in some regions, where green spaces are seen as a luxury.
- The public and private sector could potentially co-create solutions to promote healthier cities. For example, if the government allows for higher apartments with more units to be built, more space and funds could be available for better facilities and amenities in the compound.

3. Other Important Factors Affecting Health in Cities

Two other factors that affect mortality and overall wellbeing in cities covered in the discussion are: (1) heat and thermal comfort and (2) air quality.

Heat and Thermal Comfort

- The world is seeing more hot days and hotter hot days each year, which is detrimental to human health, wellbeing, and productivity, as it impacts our diet, exercise, and sleep.
- Heat is a friend and a foe. Heat exposure has positive cardiovascular and cardiometabolic health benefits across various populations, as it improves blood circulation, reduces blood sugar and inflammation, as well as soothes aching muscles and joints. However, it is an occupational hazard for those working outdoors, inhibits one's learning, affects NCD patients with compromised blood flow and sweat production, and leads to adverse pregnancy outcomes (pre-term birth, stillbirths, low birthweight).
- While the effects of heat on work productivity and health are relatively well-described in occupational and public health spaces, the knock-on effects across these two domains are poorly understood, leading to suboptimal coordinated solutions across sectors.
- Heat strain describes one's overall response to environmental stress and is affected by heat stress, clothing, and exercise. A good physiological solution will reduce or attenuate heat strain or extend tolerance to heat strain during work, thereby expanding heat capacity and leading to more work output. Examples of solutions include aerobic fitness conditioning and exercising, heat acclimatisation, pre-activity cooling (e.g., cold air exposure or drinking cold water), establishing work-rest cycles, and hydration.
- As heat is a complex problem, different sectors should collaborate even more in the future to better understand and address this.

Air Quality

- Air pollution remains an important environmental exposure and public health problem in both developed and developing countries. It is associated with increased mortality and many diseases, including cardiovascular diseases, hypertension, and lung cancer. Particulate pollution exceeding WHO guidelines is accountable for an average loss of 1.8 years in life expectancy globally, the highest compared to smoking, alcohol, and drug use.
- The major sources of fine particulate matter (PM_{2.5}) in Singapore are emissions from industry, traffic, and the transboundary haze. The variation of PM_{2.5} levels within Singapore is due to differences in activities in each area and microenvironments where measurements are taken.
- During Circuit Breaker in 2020, there was a decrease in air pollutants, including PM_{2.5}, attributed to reduced traffic and industrial activity. Recent studies also found that PM_{2.5}, NO₂ and Pollutant Standards Index (PSI) were positively correlated with COVID-19 case numbers. Every 1 µg/m³ increase in PM_{2.5} was significantly associated with a mean 22.6% increase in average daily number of COVID-19 cases.
- Research traditionally relies on data from few air-monitoring stations that are bulky, non-portable, and expensive. Researchers are exploring using personal real-time air quality monitors instead, which may better reflect the air quality of one's microenvironment to inform personalised strategies for prevention and immediate intervention.
- Local pilot studies found PM_{2.5} levels to be elevated in hawker centers and positive associations between short-term PM_{2.5} exposure and immediate cardiovascular effects (higher blood pressure and heart rate) in individuals. These findings highlight the need for interventions to reduce PM_{2.5} in such areas in future.

References

Research. Centre for Liveable Cities Singapore. (n.d.). <https://www.clc.gov.sg/research-publications/research>

Other Resources

Watch the HEAL webinar on "Health-Promoting Cities" here:

https://www.youtube.com/watch?v=LZ-GY1Wv9G0&ab_channel=SawSweeHockSchoolofPublicHealth

The webinar includes an interesting crash course on Singapore's urban planning and development since independence by Ms Elaine Tan (3:45 to 17:00)

Designing for life

<https://www.hdb.gov.sg/about-us/news-and-publications/publications/dwellings/Designing-for-Life>

Speakers



Webinar Speaker

Assoc Prof Jason Lee Kai Wei

Research Associate Professor, *Department of Physiology, NUS Yong Loo Lin School of Medicine*

Jason Lee is an exercise and thermal physiologist. He is a Fellow of the American College of Sports Medicine. He serves in various national and international panels related to human performance and safety. Jason's main research interests are in fluid balance, thermoregulation and mitigation strategies for improving human performance. He studies the physiological demands associated with passive and exertional heat stress and how humans adapt to ensure optimal performance and survival. Knowledge gained from his research has also benefitted several other governmental agencies. Jason completed his 12-year tenure at the DSO National Laboratories in 2018 by directing the Human Performance Programme in his final appointment. He currently co-leads the Human Potential Translational Research Programme at the Yong Loo Lin School of Medicine and leads the research Programme on Heat Health and Work Productivity at the Global Asia Institute in National University of Singapore. He is a member of the WHO and WMO Report on Climate Change on Workers' Health and Productivity. Jason chairs the National (Singapore) Work Group on Heat Stress Guidelines for Workers the Scientific Committee on Thermal Factors at the International Commission on Occupational Health.



Webinar Speaker

Dr Nick Petrunoff

Research Fellow, *NUS Saw Swee Hock School of Public Health*

Nick has expertise in conducting qualitative and quantitative research to inform policy and interventions which aim to promote health and prevent non-communicable diseases. Nick is excited to be contributing to these research areas in South-East Asia. In his spare time, he guides eight-year-olds around a soccer pitch whilst volunteering as coach of a children's soccer team.



Webinar Speaker

Asst Prof Seow Wei Jie

Assistant Professor, *NUS Saw Swee Hock School of Public Health*

Dr Seow is an environmental and molecular epidemiologist whose main research interests include air pollution and its association with molecular markers and health outcomes. She has extensive experience working with multidisciplinary teams and leading projects in international consortia relating to molecular epidemiology and lung cancer. She is an active member of the Female Lung Cancer Consortium in Asia (FLCCA), and the Consortium of Metabolomics Studies (COMETS).



Webinar Speaker

Ms Elaine Tan

Deputy Director (Research), *Centre for Liveable Cities*

Elaine Tan is currently on a secondment stint as Deputy Director (Research) to the Centre for Liveable Cities, at the Ministry of National Development, Singapore.

This secondment draws on Elaine's experience serving as Director of Strategic Research at the Urban Redevelopment Authority (URA). Elaine spearheaded URA's R&D efforts and directed key research programmes through Singapore's Land and Liveability National Innovation Challenge, under the auspices of the Research, Innovation and Enterprise Council.

Elaine was also formerly URA's Director of Architecture and Urban Design Excellence, working closely with the industry to advance the state of architecture and urban design in Singapore through new initiatives and programmes.

At the Centre for Liveable Cities, Elaine continues to spearhead new research frontiers in the areas of building resilience, climate change, aging, and health and well-being. Elaine believes in supporting young people to shape the future, and is an invited Mentor of the Urban Land Institute Singapore Mentorship Programme.



Webinar Moderator

Assoc Prof Falk Müller-Riemenschneider

Programme Leader (Physical Activity and Nutrition Determinants in Asia),
NUS Saw Swee Hock School of Public Health

Prof. Falk Müller-Riemenschneider is Associate Professor at the NUS Saw Swee Hock School of Public Health. He qualified as a medical doctor from the University of Cologne, Germany and subsequently worked in General Medicine and Cardiology at the Royal London Hospital and Oxford University Hospitals, United Kingdom. He completed a doctorate degree at the University of Cologne and a Master's degree in Public Health from the London School of Hygiene and Tropical Medicine. Falk's work focusses on the prevention and management of non-communicable diseases from a public health perspective, with a particular emphasis on physical activity and other key behavioural risk factors. He is leading the Physical Activity and Nutrition Determinants in Asia (PANDA) research programme that utilises digital technologies for the development and scientific evaluation of personalised lifestyle interventions.



Workshop Speaker

Dr Agis Tsouros

International Adviser Health Policy and Strategy, *World Health Organization (WHO)*

Agis Tsouros was born in Athens. He has a degree in medicine from the University of Athens and a Master's Certificate and a Ph.D. in public health from the University of Nottingham and he is an accredited public health specialist and Fellow of the Faculty of Public Health (UK).

He is Director of the Division of Policy and Governance for Health and Wellbeing at the WHO Regional Office for Europe. The Division is responsible for the implementation of the new European Health Policy - Health 2020; national and sub-national health policies; governance for health; social determinants of health and mainstreaming equity, gender and human rights; vulnerability and health including migrants and Roma health; the Healthy Cities and Regions for Health networks; mainstreaming health promotion and coordination of the healthy settings networks. Since he joined the WHO Regional Office for Europe in 1988, he has had programmatic and managerial responsibility for several areas including urban health policies and healthy cities networks; healthy

ageing, public health functions, non-communicable diseases and risk factors, environmental health and health policies at national and sub-national levels. From 2004 to 2006 he was seconded to the Greek Ministry of Health, and he then assumed the position of Chairman of the National Board of Public Health and President of the Greek CDC. He played a central role in the public health preparedness for the Athens 2004 Olympic Games.

Agis Tsouros is fluent in English, Italian, French and Greek and is particularly interested in health policy development at all levels, health promotion and lifestyles issues, governance for health and health in all policies, health diplomacy at national and city levels, public health systems, sustainable development, health assets approaches including health literacy, urban planning and health and action addressing equity and the social determinants of health. He has been the author, editor or intellectual sponsor of several publications, several of which became WHO best sellers.



Course Facilitator

Assoc Prof Jeremy Lim

Director, Leadership Institute for Global Health Transformation (LIGHT),
NUS Saw Swee Hock School of Public Health

Associate Professor Jeremy Lim is the Director of LIGHT, a global health initiative in the NUS School of Public Health, where he leads projects primarily in health systems strengthening and universal health coverage. He brings diverse and unique perspectives having spent substantial time in public and private healthcare across Asia as well as in policy formulation with Singapore's Ministry of Health.

Outside academia, Jeremy serves on the boards of various for-profit and not-for-profit organisations in different aspects of healthcare including migrant worker health, end of life care and digital health interventions. He is trained in surgery and public health, attaining post-graduate qualifications from both the United Kingdom and the United States.

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