THE "LIVEABLE CITY" AND "BLUE-GREEN URBANISM"
A COMPARATIVE EXPOSITION

University of British Columbia X National University of Singapore Joint Summer Studio
2024 July 2 - July 20

DISCLAIMER

This compendium showcases students' work from the University of British Columbia and the National University of Singapore (2024 July 2-20). The findings, interpretations, and conclusions expressed in the students' work do not necessarily reflect the views of any of the institutions. In addition, the teaching team does not guarantee the accuracy of the data included in the students' work. The report reflects public information available up to July 2024.

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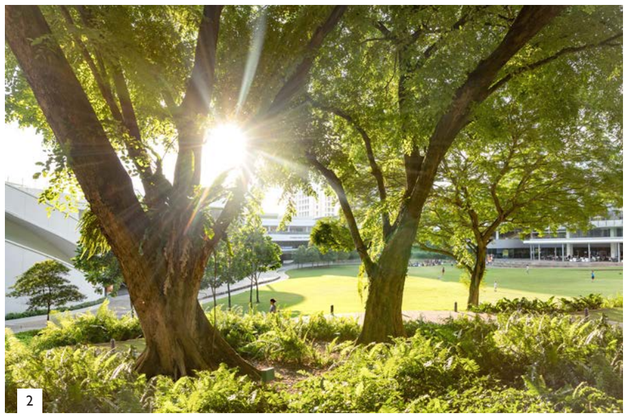

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Cover Page map source of map: Wikipedia (online), retrieved on 2025 March 5.

1. *University Boulevard (Credit: Hover Collective / UBC Brand & Marketing)*
2. *Town Green (Credit: NUS Imagebank)*

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INTRODUCTION

What makes a city truly liveable?
What are the ingredients of a liveable city?
How do liveability, sustainability, and resilience intersect?

While literature answering such questions is numerous, no single recipe of liveability applies across cities. The endeavours to shape liveability are in fact context specific. Furthermore, as the interactions between the built environment, natural environment, and human activity in cities become more complex, so do the associated opportunities and challenges. In this context, a comparative urbanism approach is helpful for understanding how various cities navigate these complexities.

DOING "COMPARATIVE URBANISM" : WHY IT MATTERS

City professions draw on case studies and precedents to learn from past experiences and "best practices" which, in turn, guide current practice and inform decision-making.

In a fast-changing urban world, case studies and precedents are increasingly becoming varied – this creates opportunities for other points of reference previously thought of as incommensurable. The act of "doing" comparison is, therefore, a critical skillset and a valuable undertaking.

A key aim of "doing"comparative urbanism is to shape novel theoretical frameworks, policies, and practices. "Doing" comparative urbanism is doing a sequential, incremental, and iterative act to reimagine conversations across the diverse spectrum of cities.

Strategies of comparative urbanism emphasise the benefits of working collaboratively – through research and action – to bridge new analytical insights for a complex and interconnected world.

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1. *Martha Piper Plaza (Credit: Don Erhardt / UBC Brand & Marketing)*
2. *The Flags of UHall (Credit: NUS Imagebank)*

PROGRAMME OVERVIEW

The UBC-NUS Joint Summer Studio was an immersive learning experience designed for senior undergraduate students from UBC and NUS to explore and compare the concept of "liveability" through the lens of blue-green urbanism. Working in mixed UBC-NUS teams, students examined urban policies and practices in both Vancouver and Singapore, gaining a deeper understanding of how planning theory and practices manifest similarly and differently in two cities of the Asia-Pacific region.

Through this collaboration, students developed international perspectives while interacting with a network of local experts, including academics, practitioners, and community leaders. The programme strived to foster mentorship, encourage cross-cultural connections, and contribute to the discourse on urban liveability.

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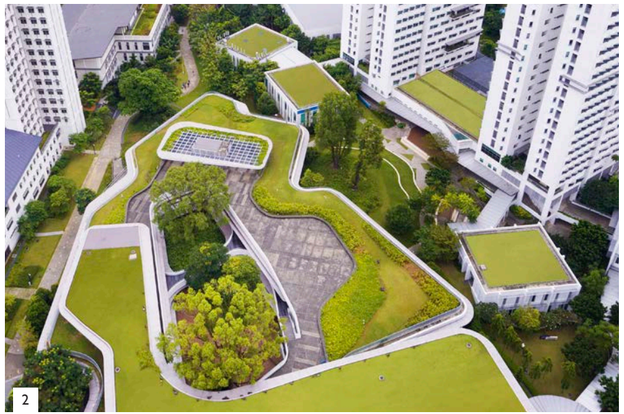

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1. *AMS Nest Rooftop Garden (Credit: Hover Collective / UBC Brand & Marketing)*
2. *UTown (Credit: NUS Imagebank)*

PROGRAMME COMPONENTS

Lectures: Specially curated series of talks featuring academics and industry professionals who shared both theoretical and practical knowledge.

Field Trips: Visits to key sites in Vancouver and Singapore, where students observed blue-green urbanism in action and met with local stakeholders, including government officials, urban planners, and community leaders.

Studio Project: Collaborative studio sessions where teams discussed and developed their comparative study of liveability, culminating in a final presentation to a review panel for feedback and guidance.

LEARNING OBJECTIVES

Global Engagement	**Knowledge:** Understand the city as a complex system within an intricately connected global system.
	Skill: Collect and present information in a geographic context that is different or unfamiliar from one's own.
	Attitude: Demonstrate motivation to advocate for and contribute to local-global actions.
Critical Inquiry and Comparative Analysis	**Knowledge:** Explore approaches to urban inquiry and understand the contested fields of theory and practice in and through which urban is problemised.
	Skill: Compare and contrast urban issues, policies, and practices in two different contexts.
	Attitude: Demonstrate motivation to tackle assumptions and expand the horizon of questions to be asked in the study of cities.
Interdisciplinary and Cross-Cultural Collaboration	**Knowledge:** Recognise that city-building necessitates expertise from various fields and understand how interdisciplinary collaboration is essential to address complex urban challenges and opportunities.
	Skill: Communicate and cooperate effectively to promote inclusivity and innovation in a global, intercultural context.
	Attitude: Demonstrate motivation to engage with diverse modes of thinking, being, and doing.

STUDIO APPROACH

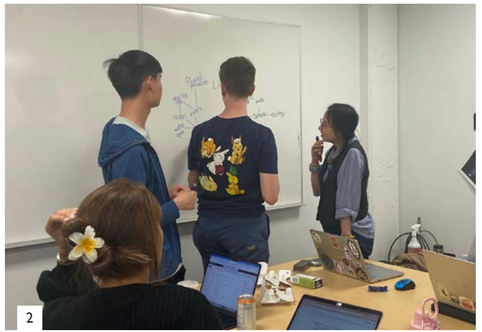
The studio focused on exploring "liveability" through the lens of blue-green urbanism by addressing key questions:

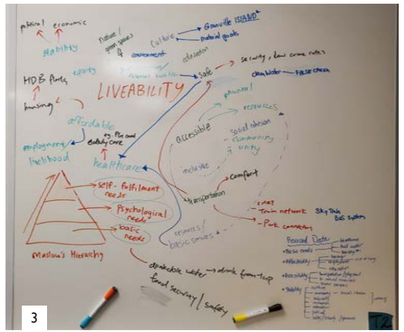
On Liveability

- What makes a city liveable? What are the determinants?
- How do global forces (economic, environmental, social, demographic, technological) influence the liveable city agenda?
- In what ways might "liveability" be understood, relationally, across different geographies and city contexts (social, cultural, climatic)?

On Blue-Green Urbanism

- What are the characteristics of blue-green urbanism? How do these characteristics address the determinants of a liveable city? How are the approaches to blue-green urbanism intertwined with other urban systems?
- How does governance, funding mechanisms, and structures of decision-making influence/shape blue-green policies and projects?
- What makes for "best practice" blue-green urbanism? In what ways might "best practice" be understood from one city context to another?





1. *Guest presentation by Ana M. Polgár, Doctoral Candidate, SCARP, Faculty of Applied Science, UBC, and PlanAdapt Fellow*
2. *Team discussion, UBC*
3. *Team brainstorming mind-map, UBC*

1. *Guest presentation by Dr. Sara Barron, Assistant Professor of Teaching Department of Forest Resources Management, Faculty of Forestry, UBC*

2. *Team brainstorming mind-map, UBC*

3. *Studio project midpoint presentation, UBC*

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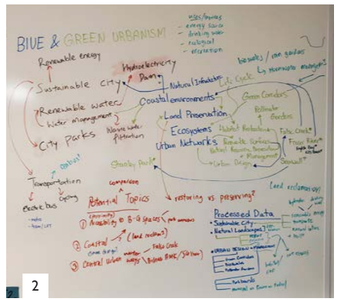

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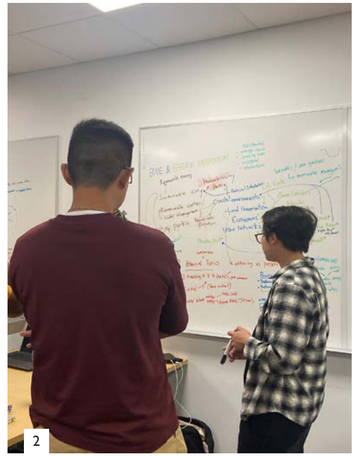
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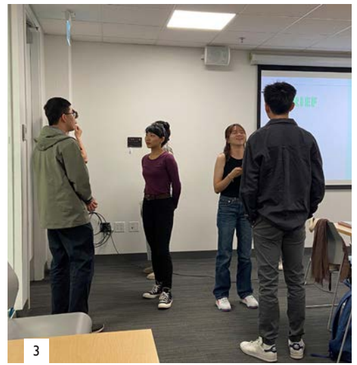
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1. *Guest presentation by Maren McBride, PLA, Associate, Senior Landscape Architect, DIALOG*

2. *Team discussion, UBC*

3. *Group discussion activity, UBC*

1. *Guest presentation by Dr. Darren Nel, Postdoctoral Fellow, Lee Kuan Yew School of Public Policy, NUS*

2. *Opening lecture by Assoc. Prof. Cheah Kok Ming, Deputy Head (Academic), Department of Architecture, Assistant Dean, College of Design and Engineering, NUS*

3. *Team brainstorming, NUS*


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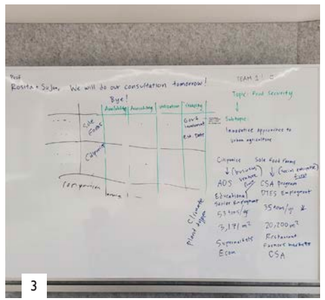
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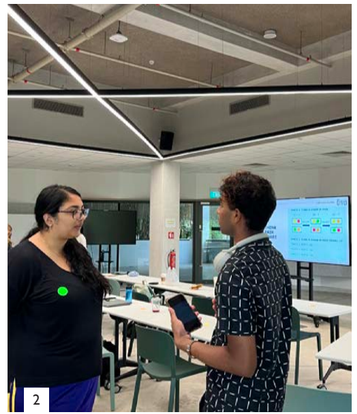
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1. *Guest presentation by Larry Yeung, Executive Director of Participate in Design (P!D)*

2. *Group discussion activity, NUS*

1. Group discussion activity, NUS

Team-Based Project

In their multidisciplinary teams, students investigated "liveability" through the lens of blue-green urbanism in Vancouver and Singapore. This project gave students the opportunity to explore how urban planning theories and practices manifest differently in these two cities, fostering a broader global understanding.

Each four-member team, consisting of UBC and NUS students from diverse disciplines, embarked on its own unique comparative study of the two cities. Teams were encouraged to approach the project with an open mind, ready to explore and experiment.

Scope and Process

DEFINE

The teams first developed a shared understanding of "liveability" and "blue-green urbanism" by addressing questions such as:

- What is the meaning of each concept?
- What is the relationship between the two concepts?
- What aspects or elements do you want to emphasise?

FRAME

Next, the teams identified the focus of their projects:

- What is your central objective?
- What information is needed to respond to your objective?
- Where and how will you gather the information?

COMPARE

Finally, the teams analysed and reflected on the information they had gathered:

- What categories or dimensions will be used to surface connections and differences?
- What insights are drawn from an evaluation of the connections and differences?
- How do the insights advance the concept of "liveability"?

VANCOUVER STUDIO

Source: ESRI (https://www.arcgis.com/apps/mapviewer), retrieved on 2025 March 2

1. *SeaBus journey across the Burrard Inlet*

2. *Pacific Spirit Park and Tower Beach Walk*

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TOPIC 1:
CONFRONTING THE PAST, SHAPING THE FUTURE

The City of Vancouver is situated on the unceded, ancestral, and traditional territories of the xʷməθkʷəy̓əm (Musqueam Indian Band), Sḵwx̱wú7mesh (Squamish Nation), and səlilwətaɬ (Tsleil-Waututh Nation). Indigenous communities have lived in this place since time immemorial, maintaining deep roots of inhabitation and environmental stewardship. An understanding of liveability in Vancouver requires a grasp of history and Indigenous heritage, recognising the cultural significance of the land and 'righting' injustices stemming from past planning practices.

Question prompts:

- In what ways are culture and heritage inextricably place-based and linked to the natural world?
- How is contemporary urban planning in Vancouver addressing colonial impacts of land dispossession and cultural heritage loss, particularly concerning Indigenous peoples?
- What would it mean to create liveable "futures" in the plural sense?

Visit to Museum of Vancouver

Visit to Museum of Vancouver

TOPIC 2:
RECONCILIATION AND CLIMATE ACTION

Before colonisation, the inlet now known as False Creek was once a vast tidal mudflat and a critical ecosystem for the local First Nations. From the early 1900s, False Creek underwent heavy industrialisation for several continuous decades. Redevelopment followed in waves: South False Creek in the 1970s, North False Creek in the 1980s and 1990s, and Southeast False Creek in the 2000s.

Climate change and urban pressures pose challenges for coastal adaptation and environmental protection—including a need to reconcile relations and interactions with the False Creek shoreline and its history. Vancouver declared 2013 the Year of Reconciliation, resulting in adoption of the City of Reconciliation Framework and the UNDRIP Strategy in 2014 and 2022, respectively.

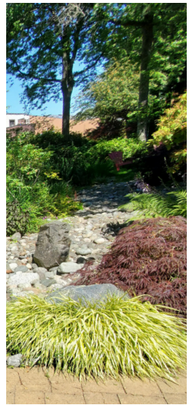
Question prompts:

- In what ways do historical land-use decisions contribute to climate vulnerability and erode human connections to nature?
- What strategies have (or might have) potential to reduce climate vulnerability and reconcile human connections to nature?
- What barriers might stand in the way of these strategies? Conversely, what channels might provide openings for these strategies to be implemented?

FALSE CREEK 'WATERS' TALK
*led by **Zaida Schneider**, Director,*
False Creek Friends Society

FALSE CREEK SOUTH COMMUNITY TOUR

led by ***Robyn Chan****, Project Manager, RePlan, False Creek South Neighbourhood Association*



OLYMPIC VILLAGE TOUR

led by ***Cameron Owen****, BCSLA CSLA MCIP RPP, Urban Watershed Planner, Rain City Strategy, City of Vancouver*

ST. GEORGE RAINWAY TOUR

led by ***Cherie Xiao****, BCSLA CSLA, Senior Project Manager, Green Infrastructure, Engineering Services, City of Vancouver*

and

Alex Scott*, Planner, City of Vancouver*

TOPIC 3:
COLLECTIVE ASPIRATIONS, COLLABORATIVE GOVERNANCE

The emphasis on public engagement in planning and design process - through workshops and reviews with stakeholders and rightsholders - reflects Vancouver's tradition of collaborative governance. Participation avenues include the Shape Your City online platform, Talk Vancouver surveys, open houses, pop-up events, public hearings, and volunteer civic agencies. Given the political dynamics of city-making, and to further advance equity and inclusion, evolving tools are essential for broadening civic engagement and ensuring diverse community input in decision-making.

Question prompts:

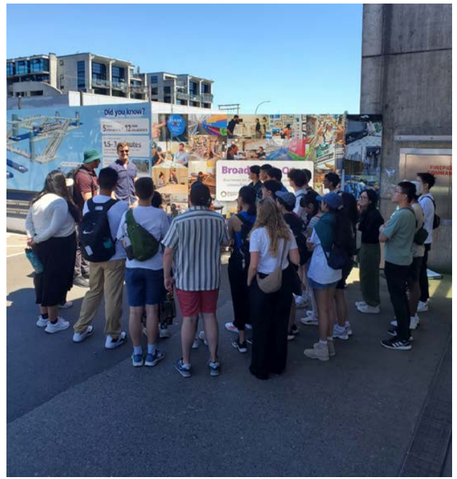
- How might blue-green initiatives serve as a catalyst for civic participation? Relatedly, what are the challenges and opportunities associated with bottom-up approaches?
- What is the role of education and advocacy in promoting public understanding and support for blue-green initiatives?
- How might technology and digital tools facilitate communication and collaboration between governments, planners, and citizens?

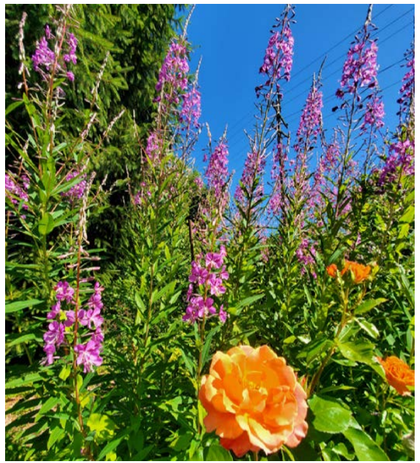
VANCOUVER CITY HALL AND THE CIVIC DISTRICT TOUR

led by ***Andrew Misiak****, RPP MCIP, Urban Planner, Special Projects Office, Planning, Urban Design & Sustainability, City of Vancouver*

and

Miles Stroh*, Planning Assistant, Transit Integration & Projects, Engineering Services, City of Vancouver*





CITY FARMER DEMONSTRATION GARDEN TOUR

led by ***Michael Levenston****, Executive Director, City Farmer*

and

Maria Keating*, Gardener and Bug Expert, City Farmer*

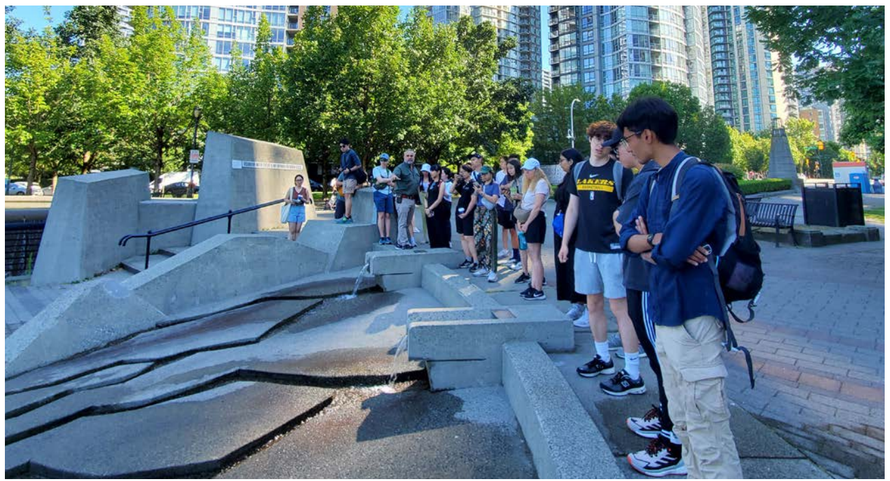
TOPIC 4:
THE GREENEST GLOBAL CITY?

Vancouver's coastal location and closeness to nature make it ideal for adopting blue-green strategies that integrate environmental protection with economic and community advantages. By investing in blue-green infrastructure, the city can foster cross-sectoral alignment of urban development with sustainability goals

Such initiatives promote partnerships among governments, private firms, and professional groups, leveraging shared resources and innovation to enhance Vancouver's global appeal. Equally important, these efforts must address social equity to ensure all communities benefit from improvements to water management, green spaces, and the public realm.

Question prompts:

- How does blue-green urbanism intersect with the goals and aspirations of global cities?
- How do investments in blue-green infrastructure affect property values, attract businesses, and contribute to the overall economic competitiveness of cities?
- What are the social equity dimensions to be considered when implementing blue-green initiatives within the context of global cities?



Richards Street Tour
led by ***Reece Rehm****, Green Infrastructure Implementation, Engineering Services, City of Vancouver*

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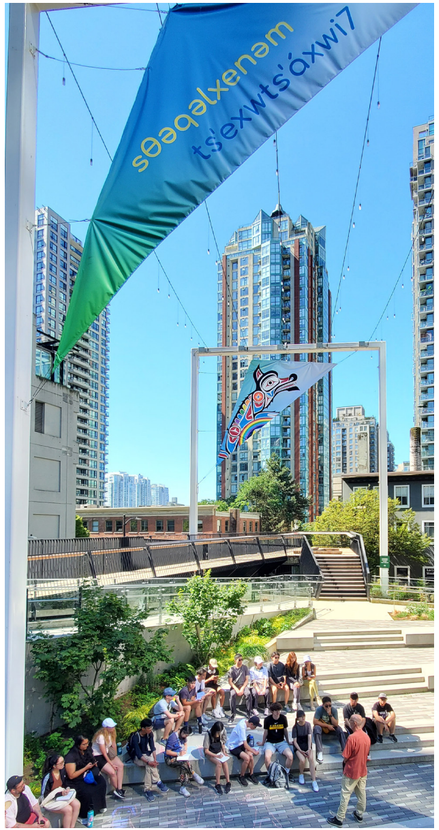
RAINBOW PARK TOUR

led by ***Joost Bakker****, Architect, AIBC AAA SAA OAA FRAIC RCA, Founding Partner, DIALOG*

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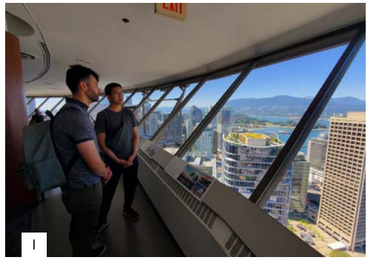
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1. ***PORT OF VANCOUVER TALK***

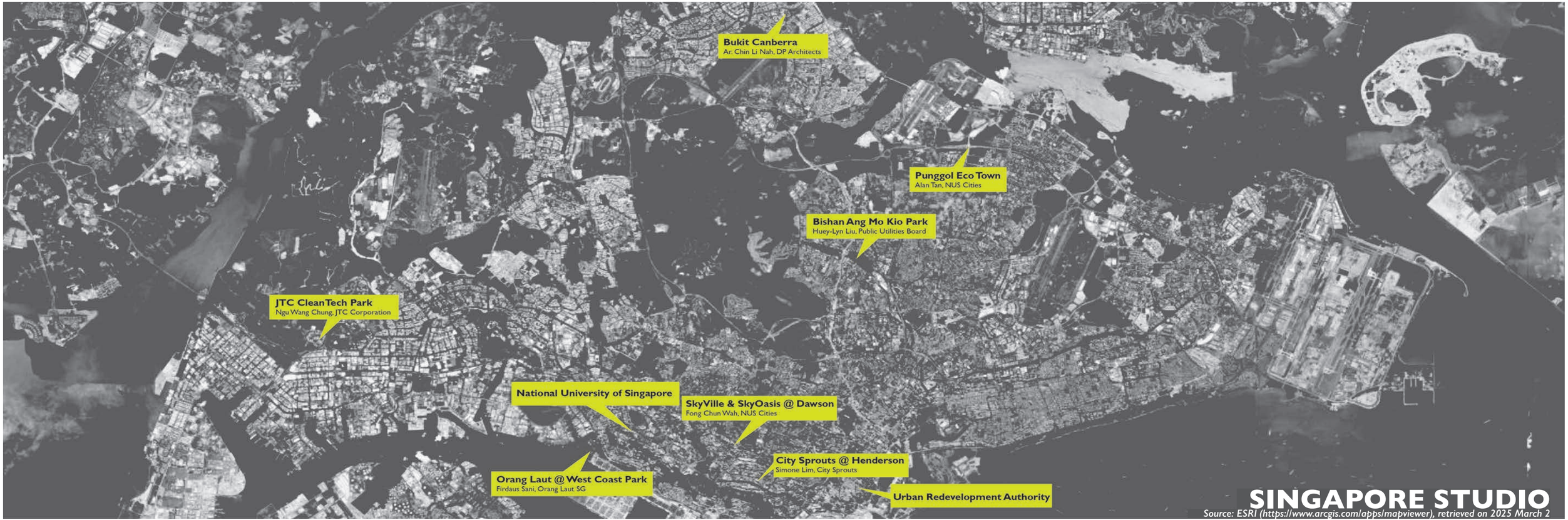
led by ***Noel Allison****, Planner, Project and Environmental Review, Vancouver Fraser Port Authority*

and

Jesse John*, Senior Project Coordinator, Habitat Development, Vancouver Fraser Port Authority*

2. ***VANCOUVER CONVENTION CENTRE WEST PRECINCT TOUR***

led by ***Margot Long****, MBCSLA AALA FCSLA ASLA LEED® ASSOCIATE, Founding Partner, PWL Partnership*



SINGAPORE STUDIO

Source: ESRI (https://www.arcgis.com/apps/mapviewer), retrieved on 2025 March 2

TOPIC 1:
JOURNEY TO BUILDING LIVEABLE SINGAPORE

Being a city-state, Singapore's journey to building liveability began as the juxtaposition of rapid urbanisation and the emphasis on good quality of urban living and environmental sustainability. Building upon the proposition of the United Nations Conference on Environment and Development (UNCED 1992) that "the social, environmental and economic needs of a country must be met but in balance with one another", Singapore's liveability approaches emphasise three key outcomes: achieving a high quality of life, sustainable environment, and competitive economy.

Singapore has limited natural resources. Therefore, fostering an integrated master planning and development, accompanied by dynamic and responsive urban governance, is key in ensuring that the intertwining of various systems is able to shape the city's liveability.

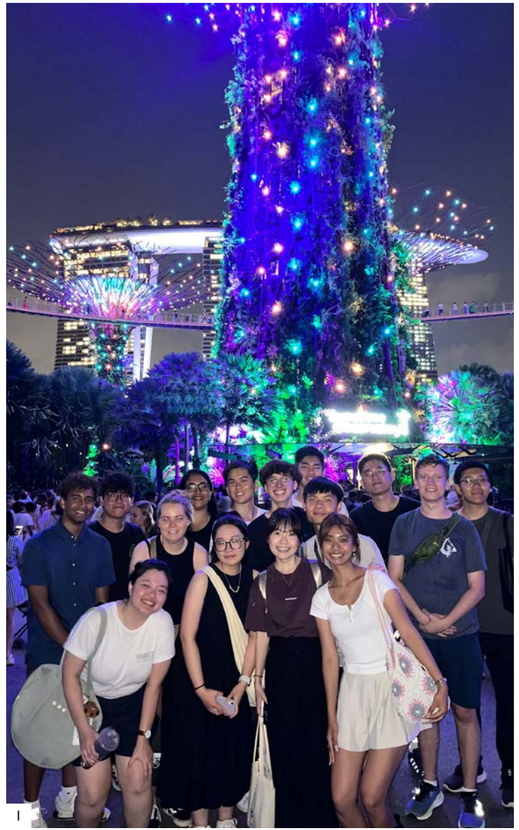
Building liveability involves more than providing infrastructure to meet basic human needs such as food, housing, education, and transport; it also includes creating opportunities for people to pursue their aspirations in relation to the intangible aspects of everyday life, such as culture and identity.

Question prompts:

- What shapes liveability in Singapore's urban development today? How has liveability transformed from before Singapore to Singapore today?
- In what ways are Singapore's liveabilty approaches unique compared to other cities?

Second leg of the programme, NUS

1. *Student-guided activity to Gardens by the Bay*
2. *Urban Redevelopment Authority visit*



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Urban Redevelopment Authority visit

TOPIC 2:
BEYOND ROOF OVER HEADS; BRING NATURE CLOSER TO HOMES

More than 80% of Singapore's residents live in public housing estates, which development is mainly governed by the Housing Development Board (HDB). The planning of public housing emphasises not only affordable homes for all eligible Singapore residents but also a living environment that fosters a good quality of life and a sense of community.

The integration of blue and green spaces was initiated since the early development of public housing. They serve as a community space for recreation and to promote social interactions. In recent years, the intensification and diversification of public housing development have resulted in the emergence of new typologies and multifunctional green and blue spaces such as high-level green spaces, community gardens, and naturalised drainage systems.

Question prompts:

- What are Singapore's approaches to building affordable housing? What are the challenges and opportunities in providing homes (not only houses) for all? How does providing homes for all contribute to liveability?
- What are the roles of blue-green urbanism in enhancing the quality of the residents?
- In what ways can blue-green initiatives be also introduced in responding to other issues related to urban life such as health, environmental and social justice? Who are the key actors?

GUEST LECTURE AT SKYVILLE AND SKYOASIS @ DAWSON

led by ***Fong Chun Wah,*** *Prof. (Practice) NUS Cities; Former Deputy Chief Executive Officer (Building), Housing Development Board (HDB)*

BISHAN - ANG MO KIO PARK TOUR

led by ***Huei-Lyn Liu****, Landscape Architect,*
Public Utilities Board (PUB),
Singapore's National Water Agency

BISHAN - ANG MO KIO PARK TOUR

led by ***Huei-Lyn Liu****, Landscape Architect,*
Public Utilities Board (PUB),
Singapore's National Water Agency

TOPIC 3:
BUILDING RESILIENT CITIES

Singapore continuously faces contestation between the needs for urban development with sustainability and liveability. Being a low-lying island state, Singapore is often affected by transboundary and regional challenges such as sea-level rise and forest fire pollution from neighbouring countries. Being a cultural melting point, fostering community and social resilience are also important to Singapore's liveability.

Such dynamics underline the need for systemic and integrated planning and governance trajectories that are robust and inclusive yet adaptive to changes. Singapore's journey to building a resilient city is embedded in the city's pursuit of a liveable and sustainable city.

Several resilience strategies include the Singapore Sustainable Blueprint (including Singapore Green Plan 2030), Resilience Framework Singapore, and Action Plan for Successful Aging.

Question prompts:

- In what ways does resilience shape liveability? What could contribute to shaping resilience?
- In what ways are blue and green initiatives intertwined with other urban systems in promoting resilience? Who plays the key role?
- How do contexts shape resilient approaches?

BUKIT CANBERRA TOUR

*led by **Chin Li Nah**, Senior Associate Director, DP Architects*

JTC CLEANTECH PARK TOUR

led by ***Ngu Wang Chung****, Deputy Director, New Estates Division 1, Jurong Town Corporation (JTC)*


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1. *JTC CLEANTECH PARK TOUR*

   led by ***Ngu Wang Chung****, Deputy Director, New Estates Division 1, Jurong Town Corporation (JTC)*

2. *ORANG LAUT WALK*

   led by ***Firdaus Sani****, Third Generation of Orang Laut*

TOPIC 4:
BUILDING CITIES WITH PEOPLE AND NATURE

Building liveable cities with people emphasises deliberate actions to continuously appreciate people's varying voices and integrate them into the whole and iterative process of urban development. In recent years, emphasis on people in Singapore's urban development is increasingly reflected in the involvement of the residents in several urban projects including neighbourhood planning and rejuvenation, the recognition of diversity and culture in urban development.

Separately, around 56% of Singapore's land area is green, which comprises actively managed and spontaneous green spaces (including the last secondary forest). Ecosystem-services based initiatives have been a core of Singapore's urban development to ensure a harmonious physical and natural environments that promotes human well-being and biodiversity conservation.

In 2013, Singapore introduced the Biophilic Town Framework, which encourages the interaction between people, nature, and place being the central of urban development.

Question prompts:

- What does building cities with people and nature mean?
- In what ways are the intertwined between people and nature shaping liveability and blue and green initiatives?
- How do contexts (e.g. geographic, social, cultural) inform and shape blue and green initiatives?

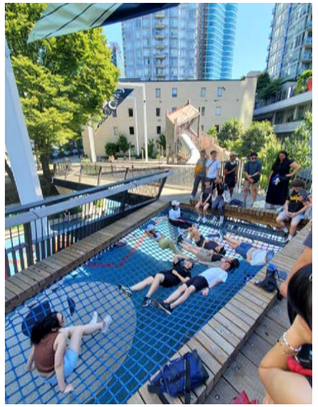
PUNGGOL ECO-TOWN TOUR
led by ***Alan Tan****, Former Director, Environmental Sustainability Research, Housing Development Board (HDB)*

PUNGGOL ECO-TOWN TOUR

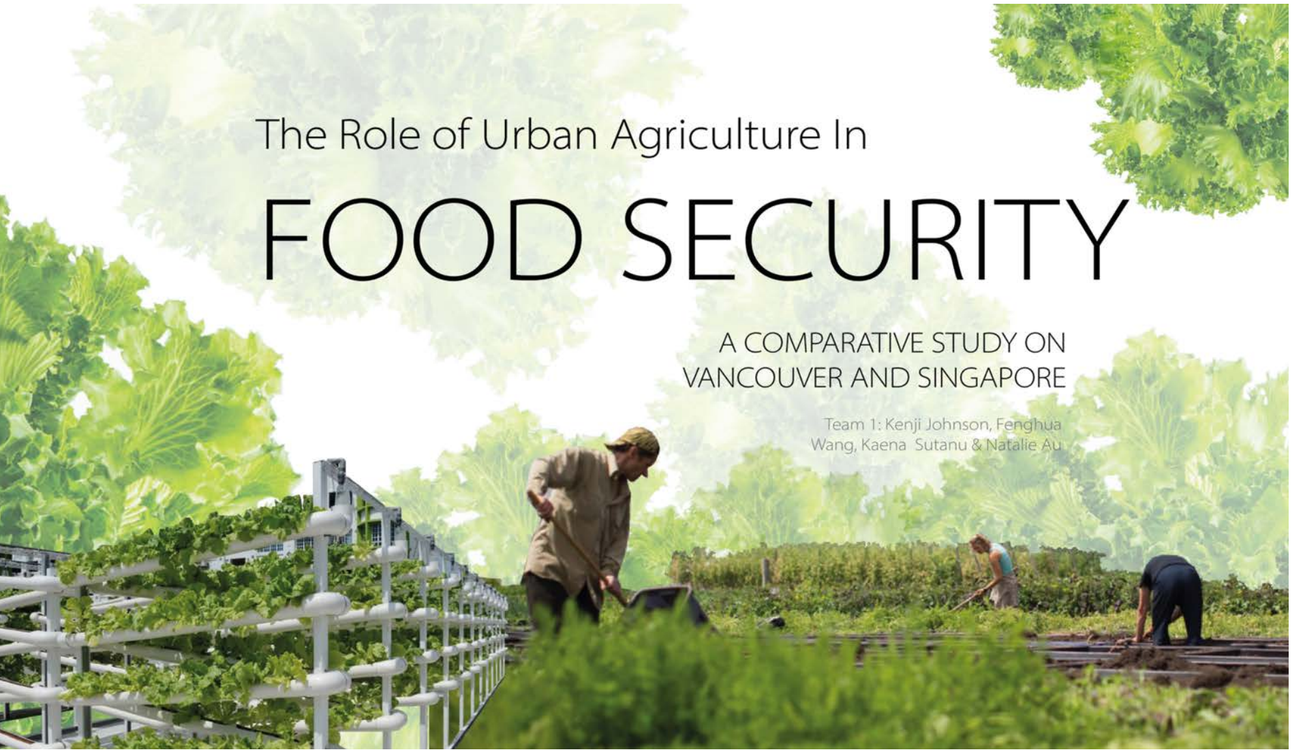
*led by **Alan Tan**, Former Director, Environmental Sustainability Research, Housing Development Board (HDB)*

CITY SPROUTS @ HENDERSON TOUR

*led by **Simone Lim**, Co-Founder, City Sprouts*



STUDENT TEAM PROJECTS



THE ROLE OF URBAN AGRICULTURE IN FOOD SECURITY

Kenji JOHNSON, University of British Columbia, BA Environment & Sustainability

Natalie AU, University of British Columbia, BDes in Architecture, Land Architecture, and Urbanism

Fenghua WANG, National University of Singapore, BEng Electrical Engineering

Kaena SUTANU, National University of Singapore, BLA Landscape Architecture

INTRODUCTION

Liveability in Vancouver and Singapore can be characterised by the sustainable environments that promote the physical and mental well-being of its residents. Blue-green urbanism practices across both cities play a vital role in facilitating the creation of these sustainable environments by providing built infrastructure and initiatives that benefit both humans and the environment.

PROBLEM STATEMENT

Amidst rapid urbanisation and population growth in both Vancouver and Singapore, the consistent procurement of sufficient, safe, and nutritious food—often referred to as "food security" in short—poses an urgent and growing threat to liveability.

FOCUS AND OBJECTIVES

Our study seeks to conduct a comparative analysis of two innovative approaches to urban agriculture in Vancouver and Singapore, and how these practices target the issues of food (in) security. We seek to uncover lessons and strategies that can be applied to other urban environments facing similar issues. Our study evaluated innovative approaches to urban agriculture based on four key food security "pillars" from the Global Strategic Framework for Food Security and Nutrition (GSF).

The key pillars include availability, accessibility, stability and utilisation.

Each pillar was defined as follows:

- *Availability* refers to a farm's overall productivity in providing a sufficient supply of food and the effective management of these resources.
- *Accessibility* refers to the equitable distribution, affordability, and ease of access to food assets.
- *Utilisation* broadly relates to the nutritional integrity of food, as well as the environmental and health-related integrity of farming practices.
- *Stability* encompasses the degree to which the other three pillars can be upheld consistently over time.

PROBLEM STATEMENT

LIVEABILITY:

Liveability in Vancouver and Singapore is characterized by the **sustainable environments** that promote the physical and mental well-being of its residents, contributing to a higher quality of life.

BLUE-GREEN URBANISM:

Blue-Green Urbanism is defined as the interdisciplinary practice of creating communities that are beneficial to both humans and the environment (i.e. sustainable environments). For the purposes of this comparative study, we will be examining the BGU practice of **urban agriculture**.

PROBLEM STATEMENT:

Amidst rapid urbanization and population growth in both Vancouver and Singapore, food (in)security poses an urgent and growing threat to the liveability of these cities. Two innovative case studies (Sole Foods Farms & Citiponics) present promising approaches for combating these issues and supplementing conventional agriculture practices.

FOCUS + OBJECTIVES

FIG. 2

FOCUS AREA

Our focus is on the topic of food (in)security and its four pillars of **Availability, Accessibility, Stability and Utilization.** Our study examines two case studies of underutilized spaces that have been repurposed to meet agricultural needs within the context of Vancouver and Singapore.

FIG. 3

OBJECTIVE

To conduct a comparative analysis of two **innovative approaches** to urban agriculture in Vancouver and Singapore, and how these practices target the issue of **food (in)security**. Comparative findings will seek to advance the understanding of liveability between contexts. We aim to investigate how each city's unique policies, urban agricultural practices, and technological innovations address these pillars to enhance food security. By analyzing the effectiveness and challenges of these approaches, we seek to uncover lessons and strategies that can be applied to other urban environments facing similar issues.

CASE STUDIES

Sole Food Farms in Vancouver and Citiponics in Singapore were selected as case studies for comparison. Both urban farms exemplified how adaptive reuse and innovative processes could be leveraged in unique ways to advance food security. While both case studies operate within a relatively similar land area, they diverge considerably in nearly all other aspects.

These include their respective practices, annual yields, business models, and underlying ethics. These contrasting features allowed for a compelling comparative analysis and subsequent findings that advanced understandings of liveability between contexts.

FRAMEWORK

AVAILABILITY
- Supply/ Productivity
- Processing
- Management

ACCESSIBILITY
- Equitable Distribution
- Affordability
- Purchasing Power

FOOD SECURITY

UTILIZATION
- Food Safety
- Food/Water Quality
- Food Preparation
- Nutritional Value

STABILITY
- Reliable access to food
- Minimal disruption due to external factors

UNDERSTANDING FOOD SECURITY

The state in which all people have consistent access to sufficient, safe, and nutritious food for a healthy and active life.

Source of Food Security Four Pillars: Global Strategic Framework for Food Security & Nutrition (GSF). (2014). In Committee on World Food Security (CFS). Retrieved July 20, 2024, from https://www.fao.org/fileadmin/templates/cfs/Docs1314/GSF/GSF_Version_5_EN.pdf

Our framework was derived through breaking down the different factors that make up Liveability and how we linked it together with the four pillars of Food Security through the lens of Blue-Green Urbanism and Urban Agriculture.

METHODS

CASE STUDY COMPARISONS

	FOOD SECURITY	AVAILABILITY	ACCESSIBILITY	UTILIZATION	STABILITY
VANCOUVER	PRACTICE	Sole Food Street Farms	Community Garden Builders	Farmers on 57th	Vancouver Urban Farming Society
	POLICY	Vancouver Food Strategy Vancouver Plan	Citiponics	COV - Urban Farm Guidelines Vancouver Plan	Sustainable Food Systems Grant Vancouver Plan
SINGAPORE	PRACTICE	Citiponics	Sustenir Agriculture	City Sprouts	SkyGreen
	POLICY	30 by 30 Plan	3 Food Basket LUSH	Safety Assurance for Food Establish-ments (SAFE)	Agri-Food Cluster Transformation (ACT) Fund

POLICY COMPARISON

VANCOUVER

SINGAPORE

FINDINGS AND INSIGHTS

In terms of results, we found that Citiponics was significantly more productive than Sole Food Farms, producing 9.6 times the annual yield (normalised relative to land area) of their Vancouver counterparts despite being confined to a smaller site. However, Sole Food Farms excelled in the accessibility category through their tiered CSA (Community Supported Agriculture) pricing model, variety of produce, and equal distribution of market locations.

Citiponics' produce was found to be priced higher than conventional alternatives and was only sold in one nearby supermarket. Concerning utilisation, Citiponics' pesticide-free AOS (Aqua-Organic System) and vertical farming techniques proved to be more efficient in conserving water than conventional methods. The design and use of Sole Food Farms' modular planter box provide versatility in layout and increase its ability to adapt and relocate when needed.

This method was implemented because land ownership could be retracted at any point and the organisation had to be ready to respond. Sole Food Farms is also a non-profit social enterprise while Citiponics was a more business-centric organisation with some focus on social impacts and education. Sole Food Farms also used nutrient-rich soil for their plantation, enabling a more diverse range of fruits to be planted from Mediterranean fruits to vegetables and herbs.

Citiponics on the other hand mainly used hydroponics for their produce, restricting their range of available plantation options, thereby producing only leafy greens. Vancouver and Singapore also have vastly different climates, with Vancouver being a temperate city while Singapore is a tropical city. The difference in climate, temperature and seasons between the two cities also impacts the yield and types of produce that can be planted, therefore the amount of food produced per year between Citiponics and Sole Food Farms is vastly different.

FINDINGS	AVAILABILITY	ACCESSIBILITY	UTILIZATION	STABILITY
VANCOUVER SOLE FOODS	• Farming on modular planting boxes and in greenhouses • 35 tons/yr on approx. 20,200 m² farm area • Temperate Climate, varying weather and temperature throughout the year (1°C - 23°C)	• CSA - 4-tiered pricing model based on recipients economic standing • Payment plans • Flexible market pickup • Discounts for items of abundance • 3 farmers markets well distributed in target community • Mediterranean fruits, vegetables, and fresh herbs • Non-profit organization • Sole Food Street Farms also grows figs, apples, cherries, pears, quince, and other fruit on 500 trees (wider diversity of produce)	• Innovative system that isolates the growing medium from pavement or contaminated soil	• Modular planter boxes, able to relocate in case the government takes back their land • Lease agreement with the City of Vancouver (policy) • Stability based on policy (social enterprise) • Non-Profit Social Enterprise • Challenges to Stability: Vandalism and Theft ▪ Over the years, $5,000 worth of greenhouse parts have been stolen on a single day, while close to 200 lbs (90 kg) of apples disappeared in a single night
SINGAPORE CITIPONICS	• Vertical Farming means more produce per square metre, increasing yield • 53 tons/yr on 3,171 m² farm area (9.6x more productive) • Tropical Climate, sufficient sunlight and rain all year (25°C - 31°C)	• More expensive due to limited stock ▪ (e.g. $3.80 for 100g for lettuce) • Only found in nearby Fairprice supermarket in Ang Mo Kio • Leafy Greens only	▪ Pesticide-free farming ▪ Every component of the farming system is renewable ▪ 1% of the water used in traditional farming and 10% of hydroponics farming ▪ Vertical Farming increases harvests by 70% per square-feet ▪ Aqua-Organic System (AOS) Technology	▪ Financial instability ▪ expensive to start and sustain business ▪ More focused on business opportunities through their AOS ▪ Citiponics based on technology (Aqua-Organic System) ▪ Premium produce pricing

INSIGHTS SUMMARY

HOW DO THE INSIGHTS ADVANCE THE CONCEPT OF LIVEABILITY AND "BLUE-GREEN URBANISM"?

- Both Singapore and Vancouver demonstrate **strong public support** for urban agriculture
- Singapore focuses on **technological innovation** and government-led initiatives, they prioritize the **efficiency** of urban farming projects
- Vancouver has more emphasis on **community engagement** and grassroots movements, prioritizing **environmental stewardship**
- Singapore addresses food security more urgently as a **densely populated nation** with limited land for traditional agriculture
- Vancouver's goals are linked to broader sustainability initiatives through the **integration of green spaces** within the urban environment

On Liveability and Blue-Green Urbanism

- Sole Food Farms' emphasis on **Accessibility** and **Stability** speaks to Vancouver's broader prioritization of equity and resilience in their BGU initiatives and livability
- Citiponics' emphasis on **Availability** and **Utilization** highlights Singapore's broader prioritization of productivity and sustainability in their BGU initiatives and liveability

Production Farms vs Showcase Farms

- Must productivity be sacrificed to provide social benefits?
- Sole Food Farms financial obligations related to the provision of social benefits (i.e. CSA, DTES employment) far outweigh their operational expenses
- Economic viability - Can community-scale urban farms achieve financial stability? E.g. Citiponics shut down despite productivity

Benefits of Sole Food Farms vs. Citiponics

From our findings, we can conclude that Sole Food Farms primarily benefits the community through social inclusion, local food production, and environmental sustainability. In contrast, Citiponics is more advantageous to business stakeholders due to its innovative Agritech solutions, profitability, and sustainable business practices. This comparative analysis highlights the different but complementary roles that urban agriculture initiatives can play in enhancing urban livability and sustainability.

SITE VISIT INSIGHTS

- Increase in agricultural entrepreneurship ventures during COVID-19 period
- Revenues generated are unable to sustain the cost of running hydroponic farms
- Upcoming innovations such as **Aquaponics** are a promising alternative to **Hydroponics** - it incorporates both vegetable and fish farming to provide greater and more stable avenues of income
- The competitive market of agriculture, challenges the revenue generation of locally farmed produce

FIG.6

Regarding the concepts of liveability and blue-green urbanism, our findings shed light on the differing liveable priorities held by each city. For example, Sole Food Farms' emphasis on accessibility and stability may suggest that Vancouver prioritises equity and resilience in their blue-green infrastructure.

At a broader level, these themes provide insight into the factors that constitute liveability in Vancouver. On the other hand, Citiponics' emphasis on availability and utilisation speaks to Singapore's prioritisation of productivity and sustainability in their blue-green initiatives and ideas of liveability.

From our findings, we can conclude that Sole Food Farms primarily benefits the community through social inclusion, local food production, and environmental sustainability.

In contrast, Citiponics is more advantageous to business stakeholders due to its innovative agritech solutions, profitability, and sustainable business practices.

This comparative analysis highlights the different but complementary roles that urban agriculture initiatives can play in enhancing urban liveability and sustainability.

REFLECTIONS

CHALLENGES

DEVELOPING OUR FRAMEWORK

- Challenges in **creating our framework** and **selecting topics of evaluation**, specifically in finding up-to-date information, establishing appropriate evaluation criteria that accurately reflect the complexities of the topic, and **balancing quantitative data with qualitative insights** to capture the full scope of the study.

FIG. 7

FUTURE OF URBAN AGRICULTURE

- Provides an **educational experience** for the younger generations
- Continues to promote **community engagement** and **overall sense of belonging**
- New **AgriTech** and the development of innovations such as hydroponics, Aquaponics, vertical farming methods will improve
- **More efficient** farming methods **maximises yield** and **minimises cost and space**

FIG. 8

CONCERNS WITH EMERGING TECHNOLOGIES

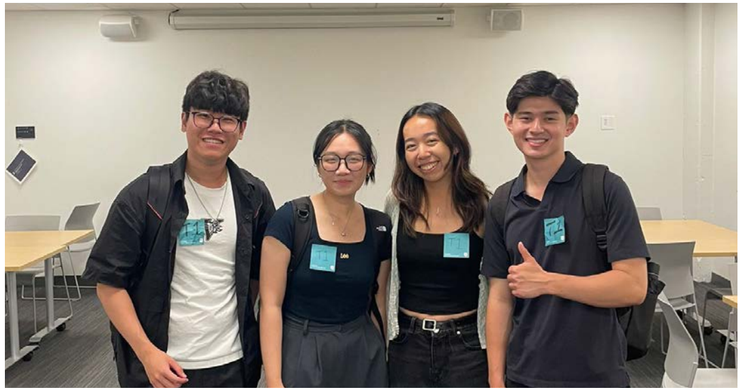
- Issues with a decrease in the **nutritional benefits** of produce
- Ethical concerns and **stigma** surrounding lab-grown produce
- Concerns on **economic sustainability** for locally grown produce, given the competitive nature of the market
- **Social stigma** against **alternative sources** of food, such as **insects**

FIG. 9

CONCLUSION

Moving forward, urban agriculture is becoming an increasingly important topic of discussion within society and its importance has been conveyed to the public through educational workshops. Through our findings, we can see similarities in the way both Singapore and Vancouver have begun to explore alternative sources of food and nutrition to help achieve food security.

For example, Singapore has recently approved the consumption of various insects as a source of protein, which works towards their target to locally supply 30% of their nutritional needs by 2030. However, as technologies continue to emerge and develop, there is existing stigma and growing concerns surrounding new methods of urban agriculture such as lab-grown produce and the economic sustainability of these ventures.



REFERENCES

Dyck, D. (2017, September 18). People work at Sole Food Street Farms in downtown Vancouver, B.C., on July 13, 2017. CTV News. https://www.ctvnews.ca/canada/the-story-of-a-thrivin-urban-farm-in-one-of-canada-s-poorest-neighbourhoods-1.3594064

Reuter. (2019, January 9). Organic vegetables are seen on growing towers that are primarily made out of polyvinyl chloride pipes at Citiponics' urban farm on the rooftop of a multi-story garage in a public housing estate in western Singapore, April 17, 2018. VOA News. https://www.voanews.com/a/with-farms-atop-malls-singapore-gets-serious-about-food-security-/4736173.html

Lay, B. (2019, March 5). Citiponics Farm. Mothership. https://mothership.sg/2019/03/urban-farming-ang-mo-kio-car-park/

Sole Food Street Farms. (2023, August 3). Simon Fraser University. https://www.sfu.ca/food/Blog/meet-sole-food-farm.html

Y, W. (2020). Citiponics Urban Vertical Farm. Google Reviews.

Zoey, L. (2024, July 12). FAQ: Craving Nasi Lemak topped with crickets? what you need to know about eating insects. CNA. https://www.channelnewsasia.com/singapore/eating-insects-bugs-taste-nutrition-health-benefits-protein-halal-food-4472196#:~:text=SINGAPORE%3A%20Social%20media%20has%20been,menus%20and%20available%20in%20stores

City Sprouts Urban Farm Singapore. Sprout Hub Community Farm. (n.d.). Citysprouts. https://citysprouts.com.sg/

Farmers on 57th. (n.d.). Farmers on 57th. https://www.farmerson57th.ca/

Global Strategic Framework for Food Security & Nutrition (GSF). (2014). In Committee on World Food Security (CFS). Retrieved July 20, 2024, from https://www.fao.org/fileadmin/templates/cfs/Docs1314/GSF/GSF_Version_3_EN.pdf

Landscaping for Urban Spaces and High-Rises (LUSH) – Shma Company Limited. (n.d.). https://shmadesigns.com/knowledge/research/landscaping-for-urban-spaces-and-high-rises-lush/

SFA | Agri-food Cluster Transformation (ACT) Fund. (n.d.). https://www.sfa.gov.sg/food-farming/funding-schemes/act-fund

SFA | Our Singapore Food Story. (n.d.). https://www.sfa.gov.sg/food-farming/sgfoodstory/our-singapore-food-story

SFA | Safety Assurance for Food Establishments (SAFE) Framework. (n.d.). https://www.sfa.gov.sg/food-retail/SAFE-framework/safety-assurance-for-food-establishments-(safe)-framework

Sole Food Street Farms. (2023, March 3). Sole Food Street Farms | We Turn Parking Lots and Vacant Land Into High Production Farms to Employ People Facing Barriers. https://solefoodfarms.com/

Systems, S. G. C. V. F. (n.d.). Vertical Farming: Singapore's Solution. Sky Greens Canada Vertical Farming Systems. https://skygreenscanada.com/blog/f/vertical-farming-singapore%E2%80%99s-solution

URBAN FARM GUIDELINES. (2019). In City of Vancouver. Retrieved July 9, 2024, from https://guidelines.vancouver.ca/guidelines-urban-farm.pdf

Vancouver Plan 2050. (2023). In City of Vancouver. Retrieved July 9, 2024, from https://vancouver.ca/home-property-development/vancouver-plan.aspx

Vancouver, C. O. (n.d.-b). Zoning and land use document library. City of Vancouver. https://vancouver.ca/home-property-development/zoning-and-land-use-policies-document-library.aspx#regulation

Vancouver, C. O. (n.d.). Sustainable Food Systems Grants. City of Vancouver. https://vancouver.ca/people-programs/sustainable-food-systems-grants.aspx

Vufs. (n.d.-b). Vancouver Urban Farming Society – VUFS. https://urban-farmers.ca/

What feeds us: Vancouver Food Strategy. (2013). In City of Vancouver. Retrieved July 9, 2024, from https://vancouver.ca/people-programs/vancouver-food-strategy.aspx

Free icons and stickers - millions of images to download. (n.d.). https://www.flaticon.com/

Who we are — Community Garden Builders. (n.d.). Community Garden Builders. https://www.communitygardenbuilders.com/who-weare#:~:text=Community%20Garden%20Builders%C2%AE%20is,community%20gardens%20and%20growing%20spaces.

30 by 30. (n.d.). https://www.ourfoodfuture.gov.sg/30by30/#:~:text=Strengthening%20our%20food%20security&text=That%20is%20why%20we're,a%20more%20resilient%20food%20future.

Ludher, E., & Paramasilvam, T. K. (2018). Food and the city: Overcoming challenges for food security. Centre for Liveable Cities Singapore.

CULTIVATING PLAY

COMPARATIVE ANALYSIS ON URBAN PLAYSCAPES

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INTRODUCTION

Liveability and blue-green urbanism provide frameworks for considering lived experiences, quality of life, and urban integration with nature. However, traditional definitions may overlook various aspects of accessibility that contribute to utilisation and enjoyment of urban spaces. Filling the gaps in the existing literature, we developed new definitions to ground our comparative research.

PROBLEMATIC DEFINITIONS

Why does liveability and blue-green urbanism matter and how are they problematic?

Traditional definitions of liveability and blue-green urbanism may **overlook** varying levels of accessibility that **affect inclusivity, belonging and enjoyment** of neighbourhood multifunctional urban green spaces.

Integrating **different demographics** in green spaces at the **neighbourhood scale** impacts the social connections fostered during the **everyday lived experience.**

LIVEABILITY

Liveability includes a community's accessibility to public playscapes for recreational activities within a diverse, equitable, and inclusive neighbourhood.

BLUE-GREEN URBANISM

Blue-green urbanism embraces the integration of natural systems into neighbourhood playscapes, enhancing sustainability and social wellbeing to benefit both the community and surrounding ecosystem.

FOCUS + OBJECTIVE

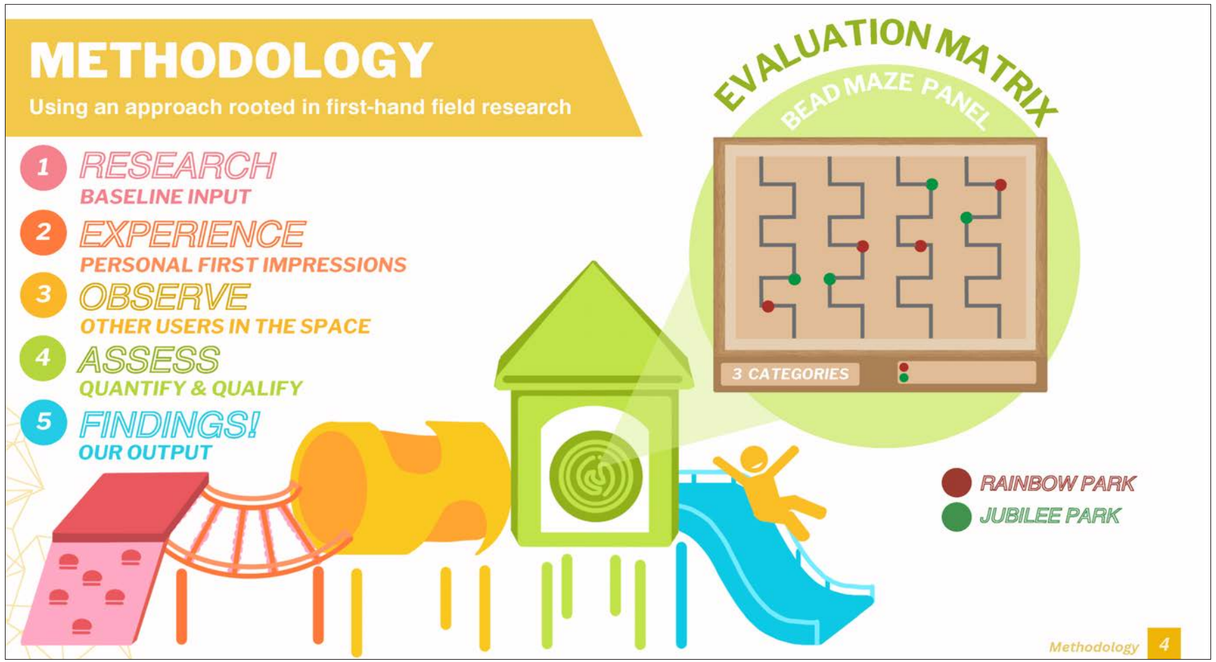
Cultivating a **welcoming atmosphere** by enhancing **physical accessibility** of neighborhood **'multifunctional playscapes'** across demographics.

RAINBOW PARK

θəqəlxenəm ts'exwts'áxwi7

JUBILEE PARK

Within Fort Canning Park



FOCUS AND OBJECTIVES

Our analysis focused on how to cultivate a welcoming atmosphere by enhancing physical accessibility of neighbourhood multifunctional playscapes for diverse demographics and interests, through a comparative study of Rainbow Park in Vancouver and Jubilee Park in Singapore. The reasons we chose these case studies are the: (i) context, where both are situated in the downtown area of their respective cities, (ii) rich heritage of the land, and (iii) playscapes for family and children.

METHODOLOGY

Methodology was constructed in the form of a play structure with 5 steps: Research, Experience, Observe, Assess, and Findings. We climb up with our initial research, experiencing the site for the first time and forming our own impressions. Similar to peering out of a tunnel, we observe others using the space, then quantifying and qualifying relevant identified metrics before finally formulating our findings.

EVALUATION MATRIX

Our evaluation matrix examined the 3 stages of the user experience in the park: getting there, physical amenities, and social acceptance. This is visually represented by a ***bead maze panel*** that you would find on a tactile play structure, where the findings to our guiding questions are plotted. We sought to objectively compare these sites without rating, choosing visualisation of actual count or percentages of what is physically there. For experiences that can only be qualittatively assessed, it was more suitable to represent our assessment.

For experiences that can only be qualitatively assessed, it was more suitable to represent our assessment with similar focus questions.

1. Getting There

The first aspect of our evaluation matrix focuses on getting to each park, where we chose to use a 5-minute walk (i.e. an approximate radius of 400 metres). This radial measure was chosen as it was a mutually agreed metric on the perfect walking distance between one location to another avoiding the usage of other modes of transport.

2. Onsite Physical Amenities

After reaching the park, we assessed the experience, where onsite amenities encompass all tangible and accessible aspects as well as how inclusive these amenities are of physical abilities. For this infrastructure our guiding questions considered the number of: formal seating types; availability of washrooms and water fountains onsite; and the variety of demographics the physical infrastructure serves, with the numerical findings represented on the panel.

3. Onsite Social Acceptance

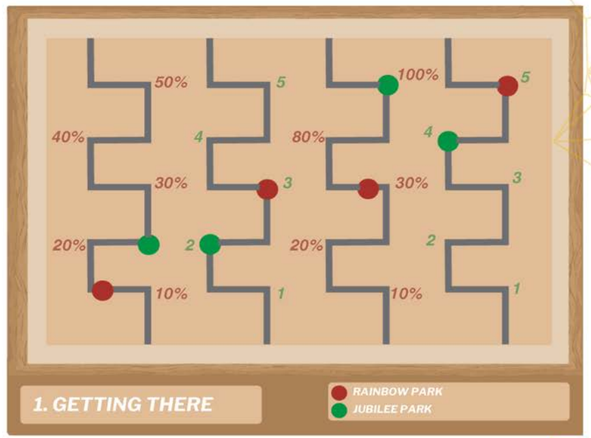
For accessibility, we considered factors like: acceptance and belonging for minority groups; infrastructure for various demographics; universal signage; and social connections. Since this data is qualitative, we used photos from our park observations to illustrate these indicators.

EVALUATION MATRIX
1. GETTING THERE

- **How much canopy cover is there when traveling towards the site?**
- **How many types of public transit infrastructure are there to access the site?**
- **During how much of the day is the site accessible?**
- **How many wheelchair accessible entryways are there?**

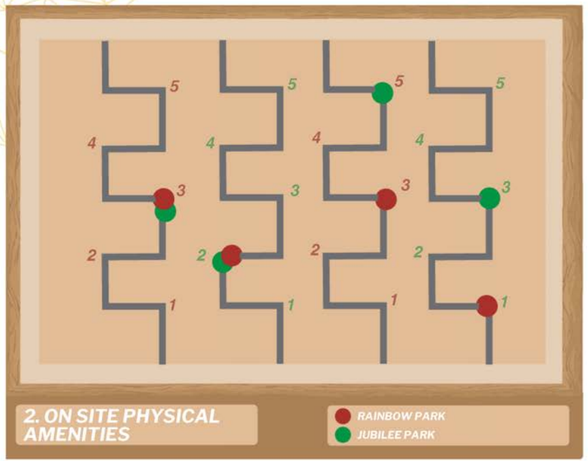


Questions were created and derived by research team through site visits



EVALUATION MATRIX
2. ON SITE PHYSICAL AMENITIES

- **How many types of formal seating are there?**
- **How many washrooms are on-site?**
- **How many water fountains are on-site?**
- **How many demographics do the play structures serve?**




Questions were created and derived by research team through site visits

Physical indicators for minority groups

Rainbow Park was named in collaboration with local Indigenous communities, represented by art installations and sky frames in the park as well as land acknowledgements on signage. Jubilee Park includes escalators for mobility challenges, though they are not wheelchair accessible.

Physical indicators for different demographics

Rainbow Park features play structures for children, various styles and locations of seating, and a cafe. for all ages. Jubilee Park features a variety of play structures intended for different age groups, an exercise training circuit for adults as well as green spaces for all ages.

Universal signage

Rainbow Park has accessible and universal washroom signage with icons and park signage that is small font and without imagery, which may prove challenging. Jubilee Park has written signage supplemented by icons, enhancing v isibility.

Opportunities for different social connections

Rainbow Park offers various seating options and spaces for different activities and age groups, including tiered amphitheatre-style seating for performances and events. Jubilee Park has monthly programs for families and children.

INSIGHTS

There are few barriers to accessibility in reaching Rainbow Park or within the park itself; however, this does not necessitate social or perceived accessibility. Representation of Indigenous communities in Rainbow Park may not fully represent the diversity of feelings and sense of belonging across all other communities. We recognise that we as researchers can only offer our observations and cannot understand or represent other identities.

In our research we found that while Rainbow Park strives to serve multiple demographics and provides a diversity of infrastructure, the park is still mainly focused towards children which may inhibit other demographics or interests from utilising the space. We observed considerable use of the exercise circuit in Jubilee Park, reflecting multi-use of the space.

Similarly, the widespread design of the park may facilitate simultaneous usage of different activities. Integrating infrastructure for other interests and demographics in future planning may provide further opportunities for connecting communities through parks. Broader consideration of languages, text size, and iconography used in signage may expand visibility.

CHALLENGES

Besides challenges in specifying our focus and data collection, differing climates, seasonal and long-term park usage could have provided valuable insights but were beyond our research scope; these aspects could be explored in future studies. Our research suggests intriguing opportunities for future designs to connect demographics, activities, and communities through blue-green urbanism in urban parks.

INSIGHTS SUMMARY

Linking physical accessibility to feeling welcome in a space

Rainbow Park

- Collaboration w local First Nations - not all identities, communities represented, consulted
- Overnight lighting - leads to noise complaints and unregulated use
- Diversity of space to serve multiple demographics - yet still geared toward children, parent-child interactions
- Potential visibility issues with signage, could be improved with universal icons

Jubilee Park

- Specific areas for different demographics - but spatially isolated
- Potential under-utilisation of vast green space for gathering
- Formal seating design lacking in opportunities for larger gatherings
- Climate potential limiting factor in utilisation of park
- Monthly programming: interactive public art for families, children
- Removal of wheelchair friendly swings infrastructure - lack of actual users to justify the infrastructure?

REFLECTIONS

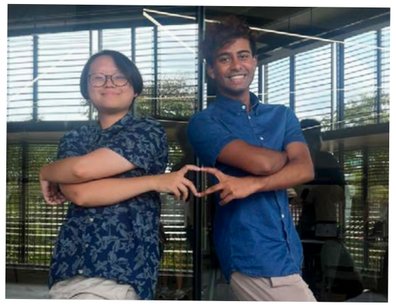
Challenges and Implications

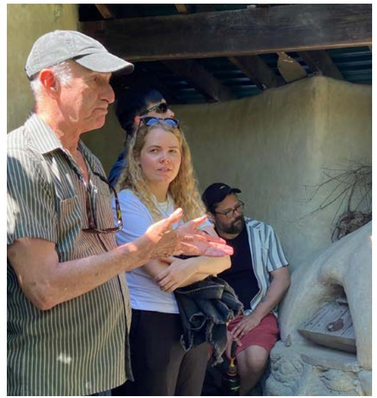
Challenges we faced

- Narrowing down the objective, overestimating the nuance and scale we can capture in the timeframe
- Selecting suitable context-specific case studies with enough accessible data synergising with our core focus and depth of matrix
- ‘Apples to apples’ data collection between the differing spatial and historical contexts of Singapore and Vancouver
- The limitations of our personal experience being unable to capture a fully holistic view of the experiences of all groups
- Knowing when data is not quantifiable and not to ‘force’ it

Future prospects of urban multifunctional playscapes

- Integrating both blue and green spaces into urban playscapes beyond token passive bioretention systems
- Accessible design features only add value if they can be properly utilised
- Regular public events and specific spaces for enhancing social cohesion beyond caretaker-child relationships





REFRENCES

Ng, L. (2023, September 7). Jubilee Park: Outdoor Fun At The Fort Canning Park Playground. Little Day Out. https://www.littledayout.com/jubilee-park-fort-canning-park-playground-and-family-friendly-recreational-space

Rainbow Park: Establishing A Communal Porch in the Heart of the City. (n.d.). DIALOG. https://dialogdesign.ca/news-events/rainbow-park-establishing-a-communal-porch-in-the-heart-of-the-city/

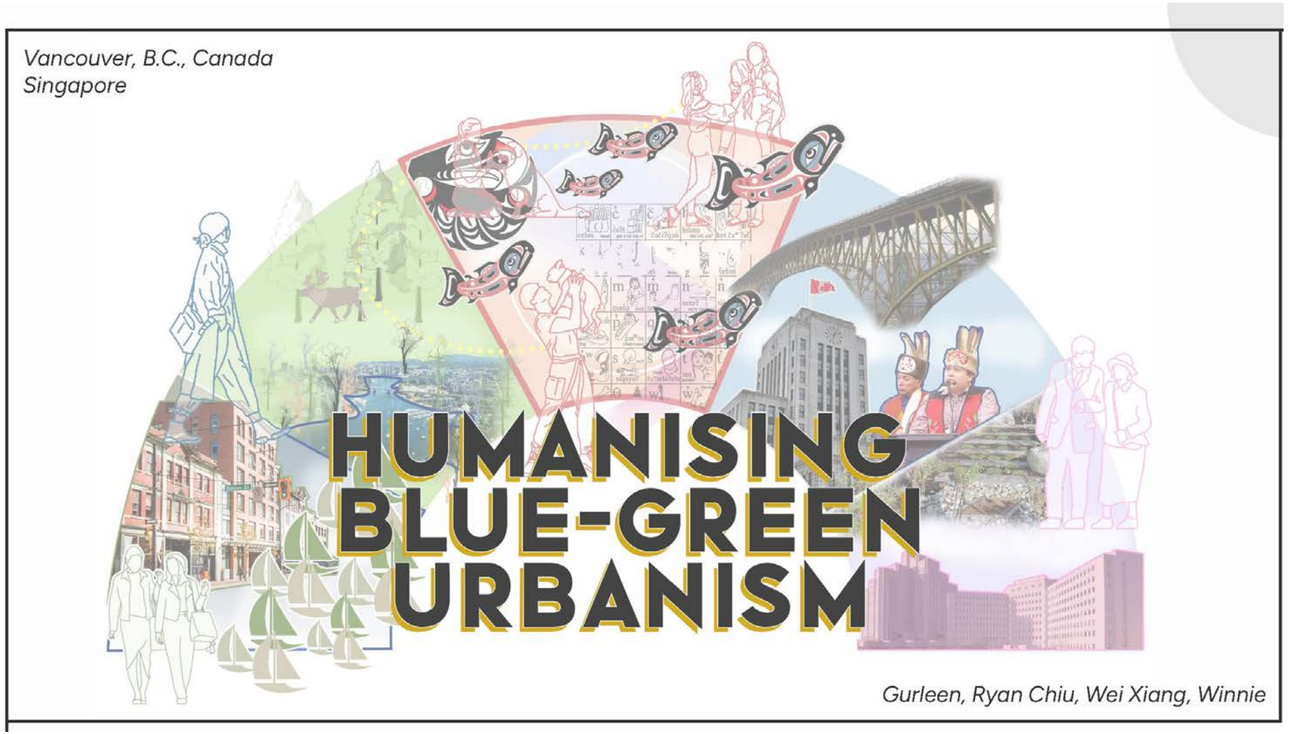
Rainbow Park, Vancouver, BC - sƟəqəlxenəm ts'exwts'áxwi7'. Dialog Design Pamphlet. Dialog Design. Retrieved 2024, July 7

Street trees. (2024, July 19). City of Vancouver Open Data Portal. https://opendata.vancouver.ca/explore/dataset/street-trees/map/

sƟəqəlxenəm | ts'exwts'áxwi7 (Rainbow Park) - Earthscape Play. (2024, April 17). Earthscape Play. https://www.earthscapeplay.com/project/smithe-and-richards-vancouver-playground-towers/

sƟəqəlxenəm ts'exwts'áxwi7 Rainbow Park: A vibrant and inclusive space in downtown Vancouver. (n.d.). DIALOG. https://dialogdesign.ca/projects/rainbow-park/

TreesSG. (n.d.). National Parks Board. https://www.nparks.gov.sg/treessg
URA Space. (n.d.). Urban Redevelopment Authority of Singapore. https://www.ura.gov.sg/maps/



HUMANISING BLUE-GREEN URBANISM

A COMPARATIVE ANALYSIS OF COMMUNITY-BUILDING PROCESSES THROUGH BLUE-GREEN INFRASTRUCTURE IN VANCOURVER AND SINGAPORE

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INTRODUCTION

To create liveable cities in the modern world, evaluations of liveability must expand beyond traditional definitions of a complex urban environment. Because of the highly competitive nature of contemporary city-making, connections with place and between people are lost to the convenience and speed at which spaces need to develop.

Particularly in dense urban contexts, place-making and community-building practices must be grounded in active, accessible, and functional public spaces in order to cultivate a culture of wellness, care, and strong civic governance. Robust community-building processes, then, strengthen other key measures of liveability by enabling residents to construct efficient inter-communal bonds within a neighbourhood.

The Problem

Blue-green systems as an identical replacement of conventional water management infrastructure reduces urban natural spaces to a tool for human benefit, restricting the place-making and community-building potential of public spaces.

Definition & Objective

Liveability

Liveability grounds a community's place-making and community-building practices in active, accessible, and functional public spaces in order to cultivate a culture of wellness, care, and strong civic governance.

Blue-Green Urbanism

Blue-Green Urbanism is a nature-based solution to water resource management in urban residential neighborhoods, prioritizing space for community engagement and connection while restoring natural hydrological processes.

FOCUS AND OBJECTIVES

We devised our Keystone Framework to reflect the interconnected nature of liveability metrics. As a keystone is the most influential piece within an arch form, a notable community is presented as the most influential member within the urban ecosystem. Once all other measures are established, strong community presence is the final piece that bears significance to enhance a liveable urban ecosystem. This establishes the absence of a community keystone as an incomplete urban framework.

Expanding the built environment discipline into a mode of strong civic governance requires thinking beyond infrastructural, economic, and environmental engineering. When blue-green systems are utilised as a nature-based approach to replace conventional water management infrastructure, urban natural spaces are reduced solely to a tool for institutional benefit.

Comparative Studies

St. George Rainway

Bishan-Ang Mo Kio Park

HYDROLOGICAL PROCESSES
Both spaces are created with a key feature that manages stormwater effectively in comparison to its fully man-made counterpart.

ECOLOGY-FOCUSED
Native plants and ecological considerations were implemented in both projects.

COMMUNITY-BASED DESIGN
Both spaces are embedded with plaza and active seating areas to encourage community engagement within the environment.

CASE STUDIES

Our analysis compares case studies of the St. George Rainway in Vancouver and Bishan-Ang Mo Kio Park in Singapore. These sites both have a core narrative of green rainwater management systems within a residential neighbourhood which was designed with community as the key benefactor of the project. Although seemingly incomparable due to their difference in scale and conceptualisation, we were able to derive insights from these differences that situate each project within their respective institutions as scale can be altered due to the social context and needs of the two cities.

For instance, Singapore's high-density apartment-dwelling population requires more public third spaces as a social space, whereas residents in Vancouver's single-family homes can do so in the comfort of their own yard. Such differences cannot be evaluated with the same normative framework; rather, in exploring so-called 'imperfect' comparisons, comparative urbanism can challenge the locus of knowledge production and normalise different measures of success.

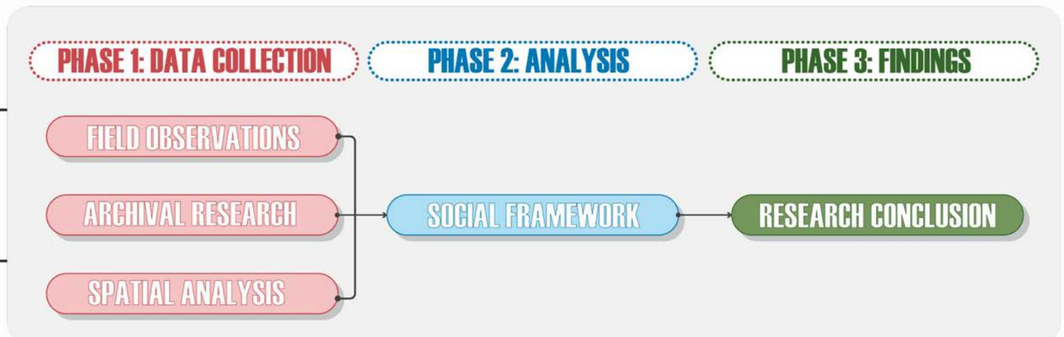
Our framework evaluates the community-building capacity of a project through five indicators:

1. Level of community involvement,
2. Types of activities offered,
3. Physical capacity,
4. Sense of community through vibrancy and interpersonal connections, and
5. Sense of belonging through connections with place.

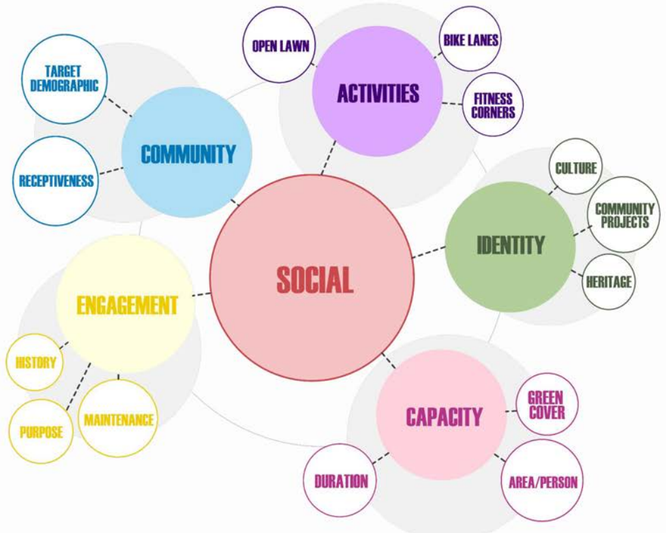
These indicators ground community-building in both tangible and intangible measurements, allowing for a non-normative comparison.

Evaluation Stages

Framework Diagram



Social Framework



SOCIAL
Framework centred around social connectivity and relevant spaces

ACTIVITIES
Planned active spaces of dwelling

IDENTITY
People's relationship with the space around them

CAPACITY
Ability of a space to cater to its demographic

ENGAGEMENT
Willingness of a community to utilise the built after the construction

COMMUNITY
Willingness of a community to be involved in the project

FINDINGS AND INSIGHTS

Through this framework, we found that both sites were able to enhance liveability through community-building; however, due to institutional and historical differences, this process manifested differently in each context. Since it stemmed from a grassroots lobbying effort, community participation was built into the St. George Rainway from its inception.

Continually and reciprocally throughout the project, community members were able to determine the outcome, fostering a bond with each other, instilling an emotional connection with the final product, which continues to show in educational efforts.

The Rainway does not offer a wide range of activities or occupy a significant area within the region—therefore, the strong sense of community stewardship and belonging do not stem from its effective environmental and technical strategies, but the community-driven nature of the project and its maintenance.

Contrarily, we found that the conception of Bishan-Ang Mo Kio Park was not based in community engagement and reflected a more conventional top-down planning approach found in Singaporean governance. Despite this, the park still served as a communal backyard for neighbouring residents with well-utilised gathering spaces, fitness corners, and canopy cover.

During our site analysis, we observed groups of youth and migrant workers socialising, indicating that the park serves not only as a transit area, but a low-barrier space for connection.

Community-building capacity in Bishan-Ang Mo Kio park, then, is founded on the interpersonal connections that occur in the park as opposed to collective governance from community members, and fostering a sense of belonging means providing opportunities to create memories in the space.

Findings

Indicators	St. George Rainway	Bishan-Ang Mo Kio Park
Engagement	First envisioned by community volunteers	Created under ABC Waters Programme Playground art patterns designed by school-age children
Activities	Citizen science activities, educational activities, walking, running, sitting	Picnicking, walking, running, biking, sports, educational activities, gathering
Capacity	0.15 sq metres/ person[1]	2.6 sq metres/ person[3]
Community	Residents are satisfied with the community aspect of this project[2]	Those that frequent the park have a greater sense of community.[4]
Identity	Residents feel a strong connection due to local involvement in the project[2]	Social interactions at the park nurture a sense of belonging[4]

1: *Mount Pleasant Social Indicators Profile 2020*. (2020). City of Vancouver. https://vancouver.ca/files/cov/social-indicators-profile-mount-pleasant.pdf
2: Rain City Strategy. (2020). ST. GEORGE RAINWAY Phase 1 Survey Summary. In *Rain City Strategy* https://syc.vancouver.ca/projects/st-george-rainway/st-george-rainway-phase-1-public-engagement-report.pdf
3: *Singapore: Subdivision (Planning Areas and Subzones) - Population statistics, Charts and map*. (n.d.). https://www.citypopulation.de/en/singapore/admin/
4: Kho, C., Vogt, C., & Tan, V. (2014). *Socialisation is ALIVE in Parks Amongst Urban Dwellers*. Research Technical Note Urban Studies Series.

Insights

Blue-Green Systems Connect People

Blue-green systems can forge interpersonal connections through public participation in planning or providing gathering spaces

Successful Solutions are Context-Based

Effective community participation can look different across institutional and local contexts

Place-making through Spatial Narratives

Grounding and Landing are key narratives for creating new social spaces

Community Building as a Keystone

Blue-green systems that connect communities generate governance capital and strengthen liveability

Blue-Green Systems Enhance Interactions with Spaces

Co-benefits of blue-green spaces bring nature to people while educating citizens on public infrastructure

Bigger ≠ Better

Higher capacity does not equate to having a strong sense of community and belonging

CONCLUSION

We found that both of these projects successfully fostered strong communities in ways that catered to local needs. In Vancouver, limited public land in a residential neighbourhood inspired a project that brought residents together, whereas in Singapore, high-density living and a technocratic approach provided a blank canvas for communities to find a new home.

A comparative approach of two seemingly incomparable projects showed that even in dramatically different contexts, a blue-green system alone would not produce the co-benefits required to create a liveable city.

The influence and maintenance of a diversity of communities fosters a resilient, reciprocal relationship between people, land, and governance that enhances all other measures of liveability, and is necessary for inclusive urban systems that make our cities a better, more liveable place for all.

Reflections

Challenges & Limitations

1. **Evaluating incomparability**

Comparing intangible factors within a space

2. **Limited research methods**

Inability to gather primary research through surveys

3. **Data availability**

Lack of existing publicly available research for the topic

4. **Quantifiable data**

Representing non-quantifiable data (eg. sense of belonging, emotions)

Future Prospects

1. **Cross-cultural learning**

Comparative urbanism as a non-normative strategy to improve planning

2. **Exploring global planning contexts**

Varying contextual considerations as a factor for measuring success

3. **Unlearning personal biases**

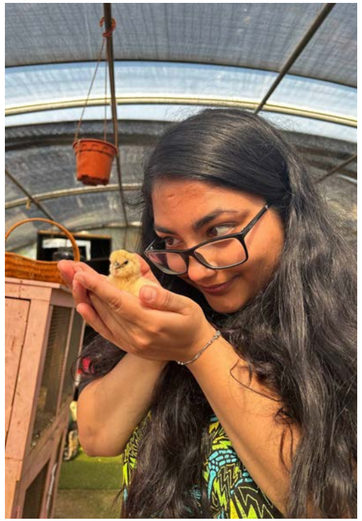
Decentralizing knowledge production through innovative comparison


(Public Utilities Board, Singapore)


(City of Vancouver)


(City of Vancouver)


(National Parks Board, Singapore)



REFERENCES

Bishan-Ang mo kio park. (n.d.). National Parks Singapore. https://beta.nparks.gov.sg/visit/parks/park-detail/bishan-ang-mo-kio-park

Bishan-Ang Mo Kio Park | 2016 ASLA Professional Awards. (n.d.). https://www.asla.org/2016awards/169669.html

Bishan Park Singapore: nature for all - Ramboll Group. (n.d.). https://www.ramboll.com/en-apac/projects/water/bishan-park-singapore-nature-for-all

Rain City Strategy. (2020). ST. GEORGE RAINWAY Phase 1 Survey Summary. In Rain City Strategy https://syc.vancouver.ca/projects/st-george-rainway/st-george-rainway-phase-1-public-engagement-report.pdf

St. George Rainway. (n.d.). Shape Your City Vancouver. https://www.shapeyourcity.ca/st-george-rainway

Welsh, J. T., & Mooney, P. (2014). The St George Rainway: building community resilience with green infrastructure. WIT Transactions on the Built Environment. https://doi.org/10.2495/uw140251

BLUE-GREEN WATERFRONT DEVELOPMENTS

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INTRODUCTION

Blue-green urbanism includes ecosystem services and infrastructure that aim to create sustainable urban waterfront developments. These services and spaces have become a key way to improve the liveability of developed cities around the world but have caused a premium to form on waterfront properties.

We value liveability by looking at how residents of each city experience three factors: accessibility of the waterfront, cost of living, and quality of the environment. Improvements to environmental quality often lead to increased cost of living and socio-economic segregation along the waterfront, affecting how people can interact and benefit from blue-green infrastructure.

Problem Statement

Investing in blue-green infrastructure along shorelines creates desirable areas but can often result in **gentrification**, **rising living costs**, and **socio-economic segregation.**

Redefining Key Terms

Liveability

Quality of life experienced by residents, which can be measured by factors including accessibility to the waterfront, cost of living, and environmental quality

Blue-Green Urbanism

Ecosystem services (such as public spaces for culture, recreation, and tourism) and infrastructure that aim to create **sustainable urban waterfront developments**.

Vancouver - False Creek

Singapore - Marina Bay

OBJECTIVE & FOCUS

A contextual ocomparison of waterfront developments in Vancouver and Singapore

INDUSTRIAL PERIOD

- Inaccessible waterfront
- Large industrial infrastructure

ACCESSIBILITY

URBAN RENEWAL

EXPO 86

Revitalisation of the waterfront areas, transportation networks and public infrastructure

ACCESSIBILITY

LANDMARK YEAR

vancouver 2010

Development of Olympic Village and increase housing prices

COST OF LIVING

THE FUTURE

POST INDEPENDENCE - 1980s

Different spectrums of housing (slums vs expensive housing)
Socio-Economic Diversity
Polluted Singapore River

ENVIRONMENT

URBAN RENEWAL

Revitalisation of the waterfront areas
Clean up of Singapore River and City Centre
Reclamation of Marina Bay Area

ENVIRONMENT

LANDMARK YEAR

Development of key public infrastructures and private residential properties

ACCESSIBILITY

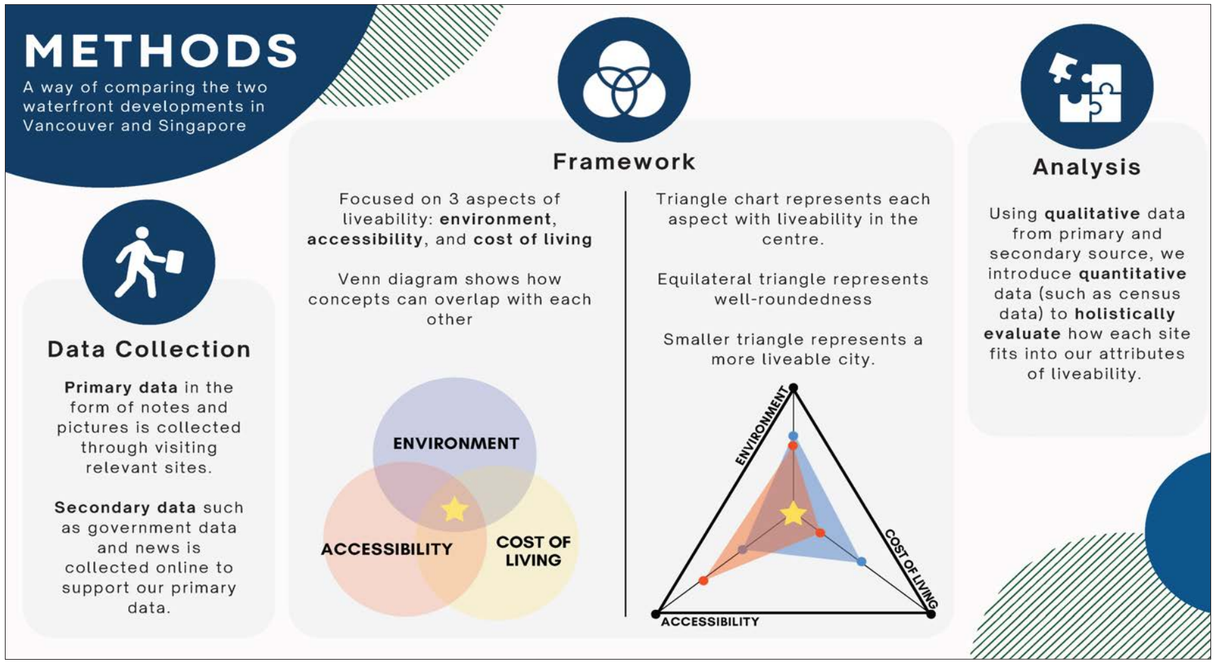
COST OF LIVING

2008: Marina Barrage
2010: Marina Bay Sands
2012: Gardens by the Bay

FOCUS AND OBJECTIVES

We are looking to compare Vancouver's False Creek (FC) with Singapore's Marina Bay (MB). While these places are situated in different contexts, they share a similar role as each city's prime waterfront area which evolved throughout the years. World Expo came to Vancouver in 1986 triggering a revitalisation of FC including transportation networks, especially the construction of the current Vancouver SkyTrains.

During the turn of the century, MB was constructed after years of land reclamation to develop the Promenade. Both cities also had their landmark year in 2010 with the opening of Olympic Village and Marina Bay Sands bringing more attention and tourism to both waterfronts. The overall urban developments of the waterfront areas bring about issues of higher property values, physical and social accessibility, and change in environment.



METHODOLOGY

Our framework is aimed at understanding how different aspects of each site fits within our definition of liveability. We used a three-way Venn diagram to represent: (i) the environment, (ii) accessibility, and (iii) cost of living. In this way, the Venn diagram also shows how individual points can influence, either positively or negatively, the different aspects of liveability. The centre of the Venn diagram is considered "perfect" liveability. We then used a triangle chart to quantify our findings for the two sites.

The smaller the triangle, the closer a city is toward achieving "perfect" liveability. Additionally, the more equilateral the triangle, the more well-rounded a city is in terms of its liveability attributes. Our data collection consists of primary data (collected in the field while talking with professionals or in observing the spaces) and secondary data (collected from government data and other online sources).

FINDINGS AND INSIGHTS

Environment

In terms of environment, we compared the landform, water source, and purpose of FC and MB. While both consisted of reclaimed land, with MB made entirely from reclaimed land, and both serving similar functions, there was lesser biodiversity and nature-based solutions around MB compared to FC. MB was designed by the Urban Redevelopment Authority to provide a 'necklace of attractions' for both locals and tourists, filled with infrastructure for retail, commercial, and leisure.

Alternatively, FC is designed more organically, and most of the natural landscape was preserved and further renovated to cater to the public realm. Its initial landscape had ecological biodiversity, native plant species and natural green bodies that still contribute highly to the lush physical environment. Therefore, FC provides a natural habitat more prominently than MB, and hence a more ideal environment than MB.

ENVIRONMENT

Vancouver

(Arsenault, 2024)

Landform
- Natural water body with land reclamation in the past
- Mix of nature and hard landscaping

Water Source
- Streams and the sea, depending on tidal patterns
- Mix of salt and fresh water

Purpose
- Residential amenity
- Tourist
- Active lifestyle area
- Recreational boating waterway

NOT IDEAL — IDEAL

Singapore

(KSAG Photography, 2007)

Landform
- Reclaimed into a bay, later dammed to become a freshwater reservoir
- Mostly hard landscaping

Water Source
- Surface water from major waterways, e.g Singapore River, Kallang River and Rochor Canal (fresh)

Purpose
- Source of water supply
- Landmark tourist attraction
- Active lifestyle area
- Flood control (PUB, n.d)

NOT IDEAL — IDEAL

ACCESSIBILITY

Vancouver

(Aquilini Development, 2016)

Connectivity
- Active transportation network access to the seawall and street grid
- Connected walking and bike lanes, limited car access

Public Transportation
- 10-minute walk to various bus and trains

Land Use
- Mostly residential condominiums

LOW — HIGH

Singapore

(Bjorn, 2008)

Connectivity
- Pedestrianised connectivity to the promenade
- Coastal promenades and through-block links for public access
- Car lite districts for new developments

Public Transportation
- Various MRT stations, all within an 8 min walk

Land Use
- Mostly commercial, with some residential

LOW — HIGH

Accessibility

In terms of accessibility, we compared connectivity, public transportation and land uses to consider how visitors are able to reach the sites. Although FC is connected with the seawall and is a 10-minute walk away from Olympic Village Station, its transportation network is insufficient compared to MB. MB benefits from numerous MRT stations located within a 15- minute walk to the water. Additionally, MB is connected to the larger Eastern Coastal Loop Park Connector, akin to Vancouver's seawall, offering essential connectivity between various sites. Therefore, MB has a higher accessibility than FC.

Cost of Living

In terms of cost of living, we compared housing types, housing prices, and average monthly household income. There was more socio-economic diversity in FC than in MB due to a mix of housing types, whereas MB exclusively features private condominiums. Although there was a difference in housing prices and average wage in FC and MB compared to their respective cities, the difference was more pronounced in MB. Therefore, the cost of living was higher in MB than FC.

After evaluating each aspect of liveability, Vancouver appeared to have a more well-rounded liveable waterfront space. This is compared to Singapore which excelled in accessibility but lagged behind in environment and cost of living on the waterfront within our framework.

COST OF LIVING

Vancouver


(Merrick Architecture, 2017)

Housing types
- Co-op, non-profit, and strata housing.

Housing prices
- Luxury residences in Olympic Village;
- $1,125 CAD/sqft vs $680 CAD/sqft (Raab, n.d.)

Average monthly household wage (before-tax)
- $9,000 CAD vs $8,000 CAD (Statistics Canada, 2021).

$ $$$

Singapore


(Rueben, 2019)

Housing types
- Mix-used 'urban village'
- Private residential, retail, office and hotel

Housing prices
- Luxury residences in Marina One;
- $2,200 SGD/sqft vs $600 SGD/sqft. (Property Guru, n.d)

Average monthly household wage (including CPF)
- $15,000 SGD vs $8,000 SGD (Department of Statistics, 2020)

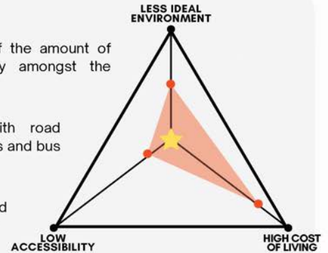
$ $$$

SINGAPORE

Environment
- There is space for improvement in terms of the amount of green space, diverse ecology & greenery amongst the concrete landscape of Marina Bay.

Accessibility
- The Waterfront is carefully designed with road networks, and has multiple public MRT Stations and bus stops catering to the water promenade

Cost of Living
- Marina Bay only consists of luxury amenities and private condominiums at most, hence property values are highest in the CBD.

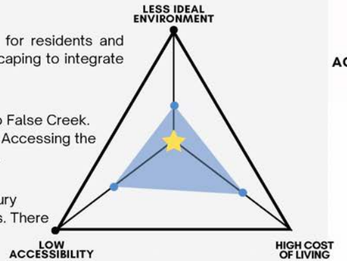


VANCOUVER

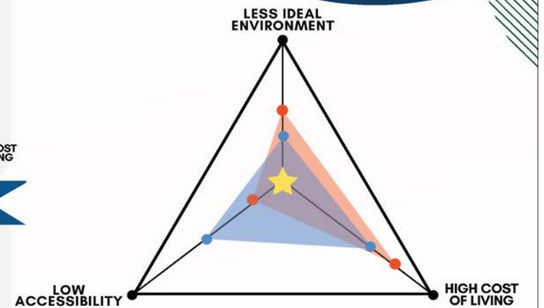
Environment
- The environment provides a relaxing space for residents and tourists alike, and uses significant soft landscaping to integrate vegetation, water, and the city.

Accessibility
- It is very accessible for those who live next to False Creek. For those coming from other parts of the city Accessing the waterfront requires more intentional planning.

Cost of Living
- Many apartments around False Creek are luxury condominiums, with higher than average rents. There are however cheaper options nearby.



INSIGHTS & SUMMARY



Despite Vancouver having better instances of living costs & environment, it can be attributed to the **nature of its land** and scale of city development.

Singapore is constantly enhancing its **'City in Nature' narrative**, and does it in tandem with having good transport infrastructure and road networks to the waterfront.

Overall, both cities have excellent aspects that make their city liveable according to the context they thrive in.

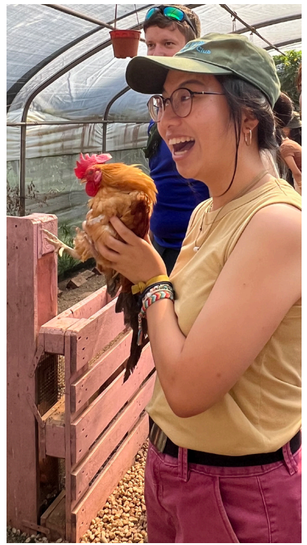
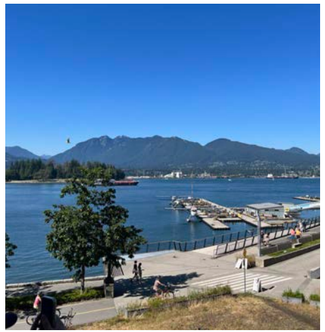
CONCLUSION

One of the biggest challenges we faced in conducting this comparative study is the time limitation. The content of this study was created and reviewed in two weeks, which limited our ability to revise and expand the scope of our study. Should there be more time, we see potential in comparing social accessibility between waterfront areas to analyse potential social impacts, and expanding variables around cost of living beyond housing costs to include cost of food, entertainment, etc.

Time constraints also only allowed us to visit our site once during our trip, which did not allow for any opportunities to follow up investigations, making the investigation reliant on more secondary sources.





REFERENCES

Aquilini Development. (2019, July 5). The village on False Creek. https://aquilinidevelopment.com/community/the-village-on-false-creek

Arsenault, J. (2024, July 19). Vancouver olympic village - urban swamp renewal. Flickr. https://www.flickr.com/photos/hnbd/6046567462

Bjørn Christian Tørrissen (2008, November 7) (https://commons.wikimedia.org/wiki/File:Singapore_Merlion_BCT.jpg), „Singapore Merlion BCT“, https://creativecommons.org/licenses/by-sa/3.0/legalcode

Choo, F. (2016, January 19). 5 interesting facts about the singapore river clean-up. The Straits Times. https://www.straitstimes.com/singapore/5-interesting-facts-about-the-singapore-river-clean-up

Guest Author. (2018, December 29). Vancouver then and now: False creek (photos). News. https://dailyhive.com/vancouver/vancouver-then-and-now-false-creek-photos

KSAG Photography. (2017, February 5). Marina Bay Sands at Sunrise, Singapore. Flickr. https://www.flickr.com/photos/ksagphotos/32562037412/in/photostream/

Marina Bay Sands. (2024). Most instagrammable places in Singapore: Marina Bay Sands. Most Instagrammable Places in Singapore | Marina Bay Sands. https://www.marinabaysands.com/guides/around-mbs/one-day-itinerary-instagrammable-spots.html

Merrick Architecture. (2017, December 20). The village on False Creek. https://merrickarch.com/work/village-false-creek/

Price, A. (2023, October 22). Marina Bay Sands: Is it really worth the money?. Where Angie Wanders. https://whereangiewanders.com/marina-bay-sands-review/

Property Guru (n.d). Marina One Residences https://www.propertyguru.com.sg/project/marina-one-residences-21458

Raab, P. (n.d.). Pinnacle on the Park. - Olympic Village Listings. https://www.olympicvillagelistings.ca/listings/bldg-2468/pinnacle-on-the-park-condos-townhomes-olympic-village-vancouver

Raab, P. (n.d.). Pinnacle on the Park. - Olympic Village Listings. https://www.olympicvillagelistings.ca/listings/bldg-2468/pinnacle-on-the-park-condos-townhomes-olympic-village-vancouver

PUB (n.d.) Marina Barrage. Singapore’s National Water Agency https://www.pub.gov.sg/public/places-of-interest/marina-barrage

Reuben. (2019, September 24). Marina one residences review: Stunning hideaway in the CBD. Property Blog Singapore - Stacked Homes. https://stackedhomes.com/editorial/marina-one-residences-review/#gs.bd0gnn

Vancouver Parks and Recreation. (2011). Vancouver Waterfront Inventory - City of Vancouver. Vancouver Waterfront Inventory. https://vancouver.ca/files/cov/vancouver-waterfront-inventory-2011.pdf

INCREASING AFFORDANCES & CONNECTIVITY TO WATER

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INTRODUCTION

In coastal contexts around the world, waterways are important community assets that provide immense value to urban populations. Understanding the current landscape of water-based recreational activities will allow us to identify disparities that exist, and help to create solutions that work to connect more people with blue urban systems. The accessiblity of water-based recreational activities in blue urban systems is influenced by three types of affordances: financial, distance, and time. Disparities in these affordances undermine the goal of achieving an equitable liveable city.

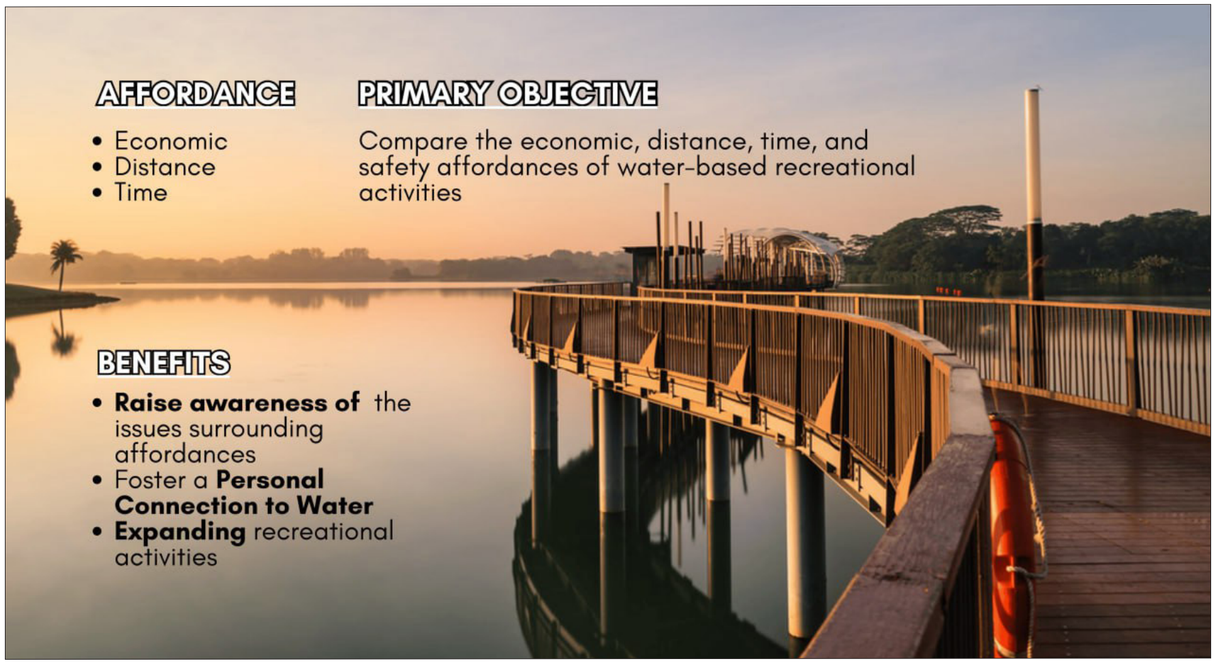
Improving access to blue spaces in urban areas can strengthen affinity between urban populations and the waterways they live by, thereby resulting in increased spatial connections and sense of belonging as well as greater awareness on environmental stewardship.

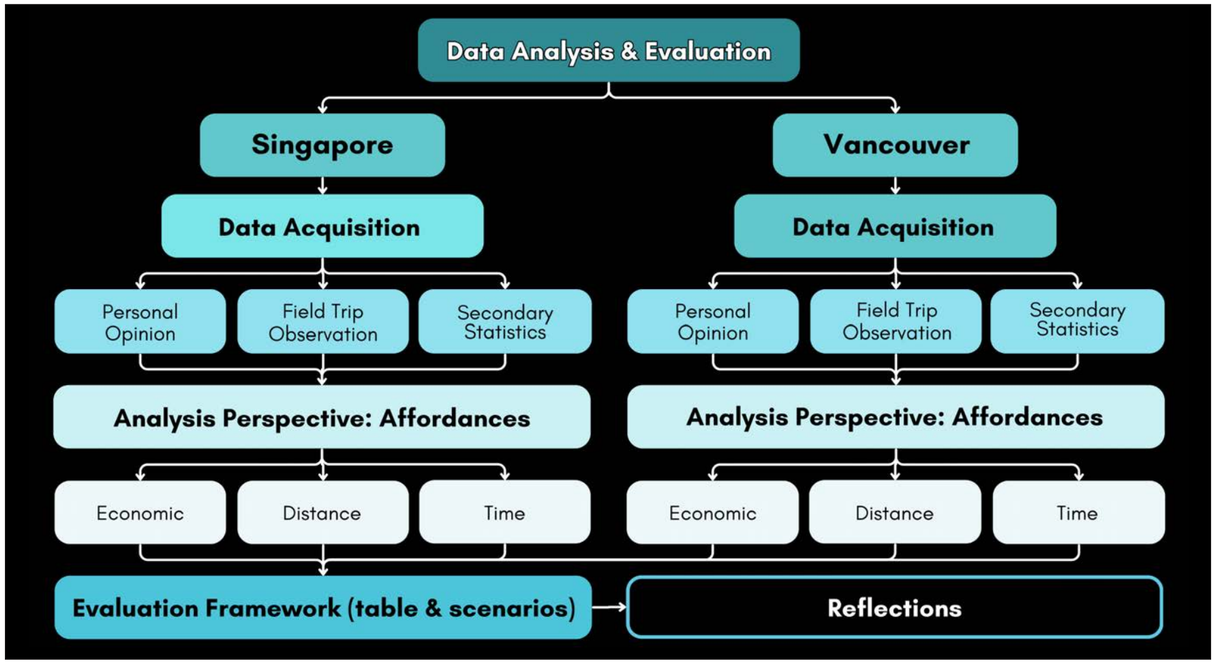
FOCUS AND OBJECTIVES

Our analysis focused its scope on **affordances**. In urban areas, affordances are qualities and design characteristics of an environment that determine how easily and effectively people can engage with and benefit from recreational activities.

Liveability strives to improve the quality of affordance to water-based recreational resources to ensure that engagement with water bodies remains equitable to all members of the community, providing better connection to the environment.

Blue-green urbanism uses ecological and hydrological elements that aims to provide increased levels of affordance for all individuals to enjoy water spaces recreationally, fostering intimate connections to blue spaces. Our analysis specifically focused on **water-based activities**, which we define as activities that come into physical contact with or on the body of water. To narrow our scope further, we streamlined the activities to kayaking because it is an accessible activity to groups of all sizes.


AFFORDANCE
• Economic
• Distance
• Time
PRIMARY OBJECTIVE
Compare the economic, distance, time, and safety affordances of water-based recreational activities
BENEFITS
• Raise awareness of the issues surrounding affordances
• Foster a Personal Connection to Water
• Expanding recreational activities


Data Analysis & Evaluation
Singapore
Vancouver
Data Acquisition
Data Acquisition
Personal Opinion
Field Trip Observation
Secondary Statistics
Personal Opinion
Field Trip Observation
Secondary Statistics
Analysis Perspective: Affordances
Analysis Perspective: Affordances
Economic
Distance
Time
Economic
Distance
Time
Evaluation Framework (table & scenarios)
Reflections

FRAMEWORK

We began our data gathering, analysis, and evaluation framework by splitting the data by city. First, we categorised the collected data as primary or secondary.

Primary data consisted of our group's personal experiences and knowledge of the study environments, and also the information and experience gathered from our field trips.

Secondary data consisted of information from websites advertising the sites we are engaging with. This data was consolidated upon the perspective of our analysis, which is affordances.

Our analysis narrowed on **three specific affordances: economic, distance, and time**.

At this stage, data from each city was merged and integrated in our evaluation framework table, where the data collected could be compared on a neutral platform. With this data, we created personas of people who fit certain demographics that would provide a glimpse at the local population of each space.

This approach would show how the water-based connectivity and affordances analysed might affect the general public. The culmination of our project is further discussed as reflections and insights from our analysis. We stopped short of making conclusions as the nature of comparative urbanism is meant to have a conversation between cities, not classify one as better than the other.

PHOTO: UBCxNUS TEAM 5

FINDINGS (SG)

Site: Lower Seletar Reservoir

- Experienced Kayaking Firsthand
- Lower Financial Barrier
- Varied Booking Increments
- Certification Required for Single Person Kayak

Government Initiative:
PAssion WaVe

Private Run Entity:
CAMELOT

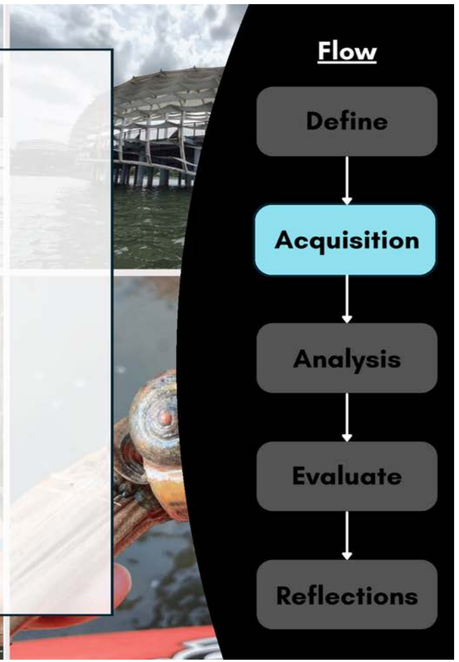


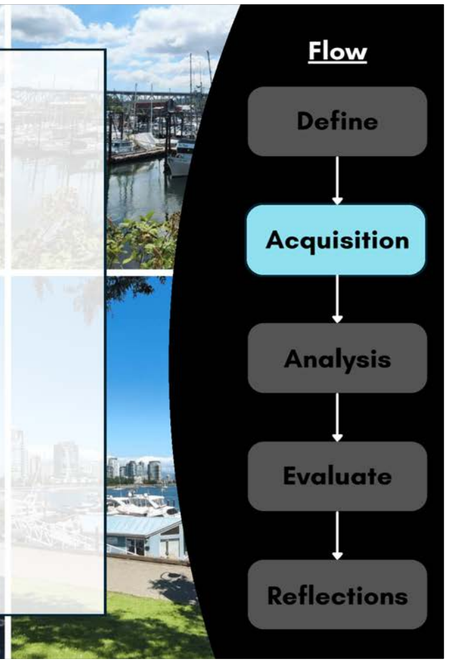
PHOTO: UBCxNUS TEAM 5

FINDINGS (VAN)

Site: False Creek [Granville Island & Olympic Village]

- Information on the Cost, Directions, and Accessibility are Widely Available
- No Certification Required to Participate
- Rentals are Mostly made by Tourists

Grassroot Organization:
The UBC Varsity Outdoor Club



FINDINGS AND INSIGHTS

In **Singapore**, our group went kayaking on the Lower Seletar Reservoir. The operator of the site, CAMELOT, offered pricing at $8 SGD per person, and bookings could be placed in 1-hour increments. The company's website was adequate; however, equipment maintenance days were not disclosed. Barriers are increased as a one-star license is required to operate a single kayak, and to go beyond certain boundaries areas.

In **Vancouver**, we made observations from Granville Island where Vancouver Water Adventures offered kayak rentals in False Creek. Although information was easily found on their website and social media platforms and no certifications or permits were required to rent equipment, costs were considered high which compromise financial affordance. In turn, the number of program participants may be lower.

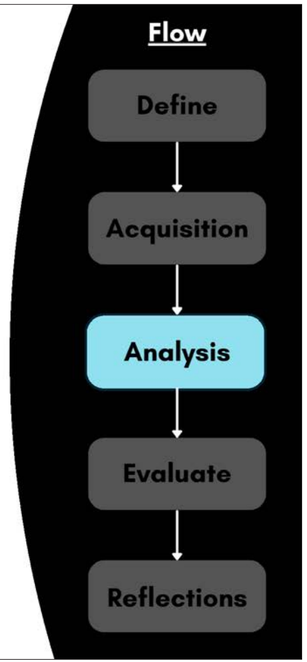
AFFORDANCE ANALYSIS TABLE

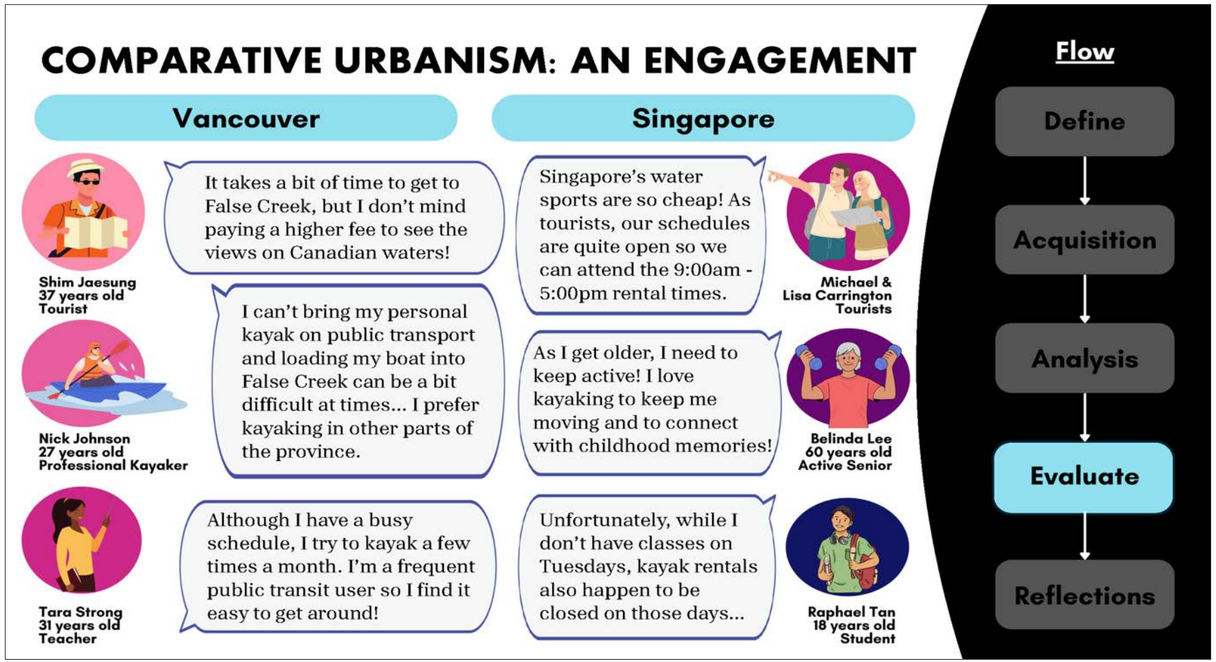
Category	Questions	Vancouver*			Singapore*		
		Mark Where Necessary					
		Shim Jaesung	Nick Johnson	Tara Strong	Michael & Lisa	Belinda	Raphael Tan
Economic	**Additional training is required for the activity** (i.e. SG Single Kayak requires a One-Star Certification)				x	x	x
	Additional equipment & supplies is/are needed (ex. life jackets, paddles, etc)						
	Personal equipment(s) can be brought to the site		x	x			
	A fee is required to participate in the activity	x	x	x	x	x	x
	Options are available to walk in and rent equipment/pay for admission with little notice	x	x	x	x	x	x
Distance	**Public transit is an accessible option to reach the site**	x		x	x		x
	Driving is an accessible option to reach the site (e.g. parking on-site)		x	x			x
	Walking is an accessible option to reach the site		x	x	x		x
	Use of Personal Mobility Devices is an accessible option to reach the site (e.g. bikes, E-scooters)		x	x	x	x	x
	There are defined boundaries/safe zones/demarcations for these activities to take place	x	x	x	x	x	x
Time	**The activity site is reachable by foot within 10 minutes, given that you are driving/taking transportation**	x	x	x	x	x	x
	Advanced bookings required to participate						
	Locations have flexible hours (i.e. open on weekends, outside of typical work hours)	x	x	x			
	Rental activities have minimum and/or maximum booking lengths	x	x	x	x	x	x
	The activity is desirable to engage in all year round, in all conditions (e.g. not seasonal)		x	x	x	x	x

*Statements are formed by the team

Sample Statement

Economic: *A fee is required to participate in this activity*





However, some grassroots organisations such as UBC's Varsity Outdoor Club aim to lower barriers by offering 'free' rentals for a returnable deposit. A key takeaway from our comparative urbanism project on the connections with water bodies is the importance of establishing personal connections to water and that connections vary across demographics and contexts. Building connections is crucial for place-making and fostering greater responsibility to the environment.

As urbanizsation continues and less recreational activity space is available on land, waterways become more important spaces for the community to be active together.

From our experiences in both cities, we have gained insights on how blue-green urbanism contributes to liveability in urban contexts through the implementation of water-based recreational activities.

We found that lowering barriers to financial, distance, and time affordances creates more liveable cities by increasing active opportunities for people to make personal connections with water. We hope that our research pushes more cities to consider blue spaces as opportunities to expand active movement beyond land.

LOOKING BACK...

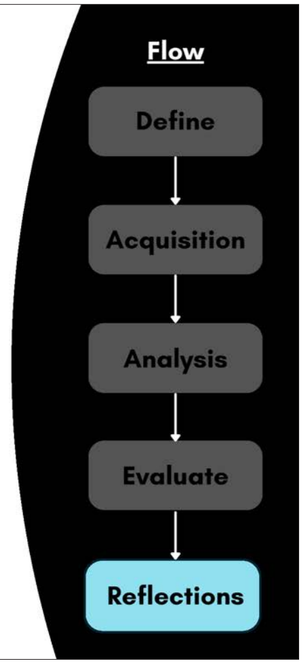
- Accessing water recreational activities @Vancouver → Limited Data Collection
- Had issues visiting PAssion WaVe Marina Bay @Singapore due to maintenance day

...TO MOVE FORWARD

- Understand what makes cities liveable through comparative studies
- Our Hope: Future comparative urbanism studies focusing on water-based activities

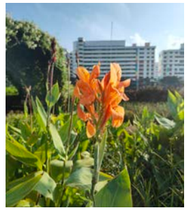
BIGGEST TAKEAWAY

- Establishing personal connections to water is important for both place making and instilling environmental stewardship as individuals will develop greater personal value to a place



CONCLUSION

With the understanding that we have extracted from this analysis, we can overcome the affordance barriers of implementing blue-green urbanism in our cities. We hope that future comparative urbanism studies focus on water-based activities, ultimately leading to more research into how blue-green urbanism can be implemented to create more equitable, accessible, and inclusive environments for all.

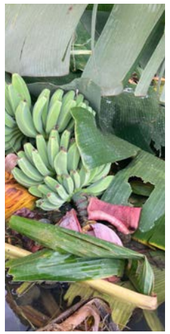













REFERENCES

Become a False Creek Light Trapper!. False Creek Friends. (n.d.). Retrieved July 8, 2024, from https://www.falsecreekfriends.org/lighttrappers/.

Gear Rental. Gear Rental - VOC Wiki. (2024, May 12). https://www.ubc-voc.com/wiki/Gear_Rental#Gear_Hours_or_Pay_for_Membership.
Government of Singapore. (2024, April 21). PAssion Wave. onePA. https://www.onepa.gov.sg/about-us/passion-wave.

Home - Vancouver Water Adventures. Vancouver Water Adventures. (2024, May 17). https://www.vancouverwateradventures.com/.

Elliot, L. R., White, M. P., Grellier, J., Garrett, J. K., Cirach, M., Wheeler, B. W., Bratman, G. N., van der Bosch, M. A., Ojala, A., Roiko, A., Lima, M. L., O'Connor, A., Gascon, M., Nieuwenhuisjen, M., & Fleming, L. E. (2020, March 18). Research note: Residential distance and recreational visits to coastal and inland blue spaces in eighteen countries. Landscape and Urban Planning. https://www.sciencedirect.com/science/article/pii/S0169204619313337?via%3Dihub.

URBAN HAVEN

Creating a framework to compare cities and their public housing projects

UBC-NUS SUMMER STUDIO - TEAM 6

UBC - MATTHEW AND JEFFREY
NUS - SRI AND BEATRICE

URBAN HAVEN

CREATING A FRAMEWORK TO COMPARE CITIES AND THEIR PUBLIC HOUSING PROJECTS

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INTRODUCTION

Our research examined the complexities and nuances of the relationship between blue-green urbanism and liveability in public residential developments in cities. There is a significant gap in the quantified relationship between the two, and thus we created a comparative framework that cities around the world can adopt.

Our first trial of this framework involved two cities—Vancouver and Singapore—where we examined metrics of blue-green urbanism and liveability implemented within public housing in order to build a strong understanding of how each city compares and contrasts, as well as where their strengths and weaknesses lie for future planning.

KEY DEFINITIONS

LIVEABILITY

Defined by levels of blue-green urbanism and affordability in a residential neighbourhood with sufficient living space and of suitable quality.

BLUE-GREEN URBANISM

Blue-green urbanism is defined by competent water systems and green spaces that are seamlessly integrated into a residential neighbourhood.

PROBLEM STATEMENT

There is a significant **gap** in the quantified relationship between liveability and blue-green urbanism in **residential** neighborhoods. As a result, there is no universal scale to which cities can be measured and compared in this facet.

FOCUS AND OBJECTIVES

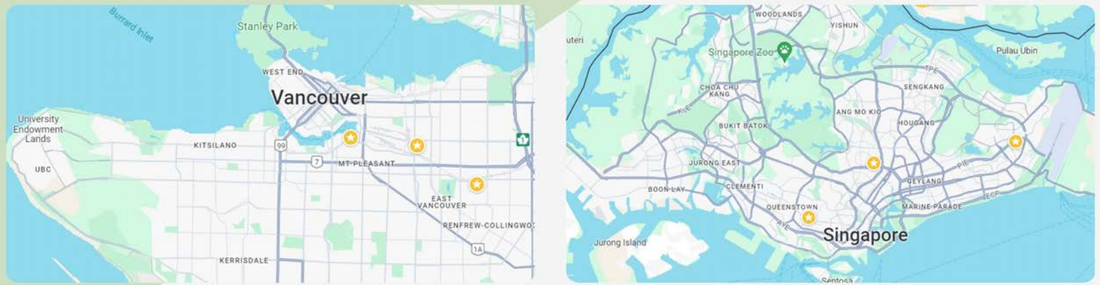
01. FOCUS

Developing a **5-point scale universal framework** with six different categories to make comparative findings on liveability and blue green urbanism in **public residential** developments.

02. OBJECTIVES

Using Singapore and Vancouver as our **first two case studies**, we can provide valuable insights on liveability and blue-green urbanism for them to consider during their public housing planning process.

CHOSEN RESIDENTIAL NEIGHBOURHOODS



VANCOUVER

Yellow Stars = Locations of Choice
Credit: Google Maps

SINGAPORE

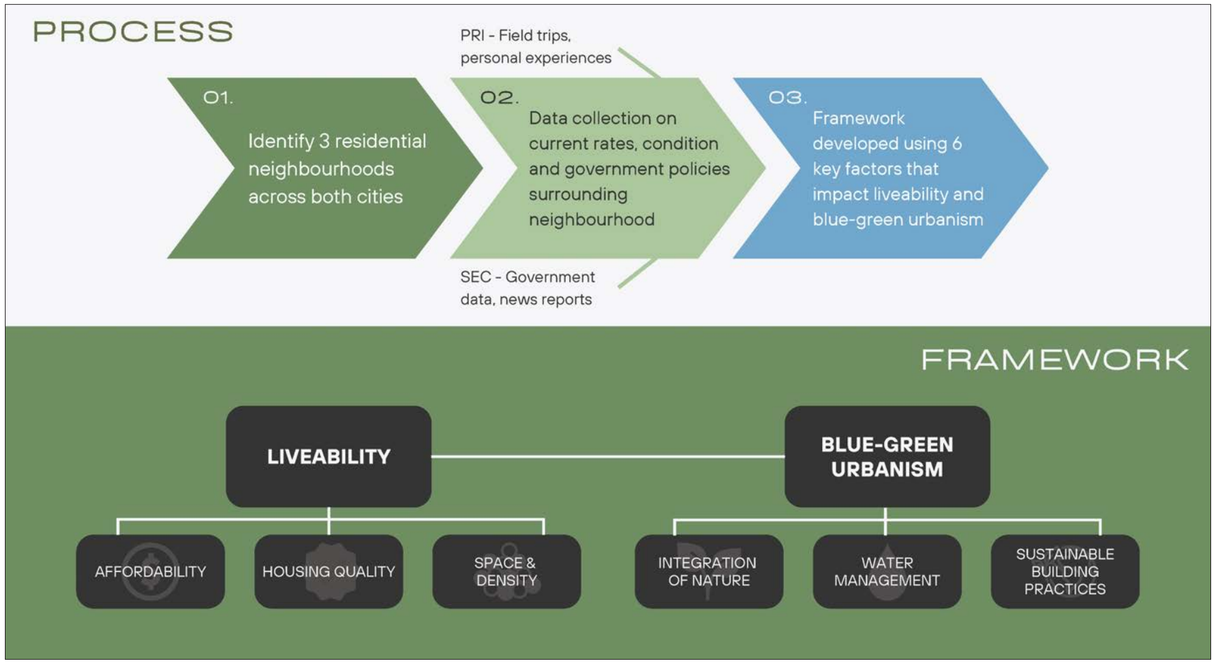
FRAMEWORK

Our framework is our method of evaluation, and as such, must be comprehensive and applicable to unique cities. Inside the framework are six different metrics to which three fall under the umbrella of blue-green urbanism, and three under liveability. All six tie in with our continued approach for examining public housing development in each city of study.

That said, our liveability category included "population density", which was measured as population per square kilometre. At the individual public housing scale in Vancouver, where developments tend to be of a smaller size, population was evaluated as population per square metre to accommodate unit conversion issues which then resulted in an N/A score due to the risk of data being skewed.

The liveability category also included "affordability", which was measured as % household gross income spent on the mortgage payment of a living space. Lastly, "housing quality" was determined as the percentage of public housing built during a certain measurement of time, to account for safety requirements at the time.

In terms of the blue-green urbanism category, the three categories are: "sustainable building practices", measured by the carbon footprint of buildings and their tonnes of carbon dioxide (CO_2) released per capita annually; "water management", which was determined by the annual flow of water per capita per day; and " integration of nature", seen as the amount of green space per person in metres squared. All six factors apply to strictly public housing developments in the respective cities.



During our deliberation in determining the six evaluation variables, we acknowledged that we needed variables that would be able to be analysed both quantitatively and qualitatively. This meant that some valuable metrics, such as quality of space, sense of place, or climate, would have to be neglected. While we know that many other metrics shape the realms of liveability and blue-green urbanism, these are the six we believe do the best representation; however, we can see the framework being expanded to include other metrics in the future.

The metrics were combined into a final evaluation, classified on a five-point scale with the score being the average of the six metrics.

It is important to note that this evaluation framework does not place emphasis on city ranking, but rather to enact comparison as a means of providing feedback on where each city can improve for the future.

For each of the six categories, there would be five-point scale with a *qualitative assessment* assigned to each point value (e.g. 1 = poor, 5 = exceeding expectations), but tailored quantitatively to address the different scales to which Vancouver and Singapore sit (e.g. density scale will be much higher in Singapore than Vancouver).

Before applying the five-point scale, however, we compiled six different public housing developments (three from Singapore, and three from Vancouver) to get a better sense of what we were working with. We conducted data collection on the current pricing, conditions, and policies, as well as the living experience in those six neighbourhoods, three in each city.

The data were either from primary sources such as field trips and personal experiences, or secondary data in the form of GIS data, government censuses and reports, as well as news reports.

We used the same framework and research methods we were planning to use for the cities for these public housing developments. These public housing developments contributed to the overall score of the cities but were not averaged to get the final score.

The data were either from primary sources such as field trips and personal experiences, or secondary data in the form of GIS data, government censuses and reports, as well as news reports.

Along with our results, there are other important factors to acknowledge, such as policy in each city. In terms of our six metrics, each city has different laws. For instance, Vancouver's three levels of government contribute and mandate much different housing requirements than Singapore's sole Housing Development Board (HDB), with policies in British Columbia also able to be rejected by different levels of government. Policy plays a huge factor in how the cities are shaped, and their limitations and progression which will shape their place amongst the framework's metrics.

RESULTS FROM VANCOUVER CASE STUDIES

3 / 5 AFFORDABILITY	5 / 5 HOUSING QUALITY	NA / 5 SPACE & DENSITY	3 / 5 INTEGRATION OF NATURE	5 / 5 WATER MANAGEMENT	1 / 5 SUSTAINABLE BUILDING PRACTICES

OLYMPIC VILLAGE **SCORE: 3.4/5**

4 / 5 AFFORDABILITY	3 / 5 HOUSING QUALITY	NA / 5 SPACE & DENSITY	2 / 5 INTEGRATION OF NATURE	5 / 5 WATER MANAGEMENT	2 / 5 SUSTAINABLE BUILDING PRACTICES

STILL CREEK HOUSING COOPERATIVE **SCORE: 3.2/5**

5 / 5 AFFORDABILITY	4 / 5 HOUSING QUALITY	NA / 5 SPACE & DENSITY	5 / 5 INTEGRATION OF NATURE	5 / 5 WATER MANAGEMENT	2 / 5 SUSTAINABLE BUILDING PRACTICES

LAURA JAMIESON COOPERATIVE **CITY OF VANCOUVER SCORE = 3.83/5** **SCORE: 4.2/5**

DATA COLLECTED THROUGH RESPECTIVE PUBLIC HOUSING WEBSITES, GOVERNMENT WEBSITES (BC HOUSING, STATISTICS CANADA, VANCOUVER MAPS, VANCOUVER.CA), MEDIA (CTV NEWS), AND PRIVATIZED DATA (MOUNTAIN MATH, NORTHWEST HYDRAULIC CONSULTANTS, BRIDGE ELECTRONICS, AREA VIBES, GOOGLE MAPS, OUR WORLD IN DATA)

RESULTS FROM SINGAPORE CASE STUDIES

3 / 5 AFFORDABILITY	5 / 5 HOUSING QUALITY	5 / 5 SPACE & DENSITY	4 / 5 INTEGRATION OF NATURE	3 / 5 WATER MANAGEMENT	5 / 5 SUSTAINABLE BUILDING PRACTICES

SKYVILLE @ DAWSON **SCORE: 4.2/5**

5 / 5 AFFORDABILITY	4 / 5 HOUSING QUALITY	2 / 5 SPACE & DENSITY	4 / 5 INTEGRATION OF NATURE	3 / 5 WATER MANAGEMENT	3 / 5 SUSTAINABLE BUILDING PRACTICES

TAMPINES **SCORE: 3.5/5**

5 / 5 AFFORDABILITY	2 / 5 HOUSING QUALITY	2 / 5 SPACE & DENSITY	4 / 5 INTEGRATION OF NATURE	3 / 5 WATER MANAGEMENT	2 / 5 SUSTAINABLE BUILDING PRACTICES

TOA PAYOH **SINGAPORE CITY SCORE = 3.33/5** **SCORE: 3/5**

DATA COLLECTED THROUGH GOVERNMENT WEBSITES (CENTRAL PROVIDENT FUND BOARD), MEDIA (STRAITS TIMES), AND PRIVATIZED DATA (NATIONAL UNIVERSITY OF SINGAPORE, DATABASE EARTH, CITYPOPULATION.DE, OUR WORLD IN DATA)

COMPARATIVE FINDINGS

VANCOUVER

- STRONG WATER MANAGEMENT STRATEGIES
- ENVIRONMENTALLY FRIENDLY BUILDING PRACTICES
- CLOSE PROXIMITY TO PUBLIC SPACE, PROFICIENT LIVING SPACE
- COST OF HOUSING AMONGST THE CHEAPEST IN THE CITY
- GREEN SPACE PER CAPITA LACKING
- HOUSING SAFETY AND NATURAL DISASTER RISK IS MODERATE BECAUSE OF OLDER HOUSING UNITS

SINGAPORE

- BALANCED USE OF TRADITIONAL AND SUSTAINABLE BUILDING PRACTICES.
- GREEN SPACE PER CAPITA HIGH
- COST OF HOUSING RELATIVELY AFFORDABLE FOR RESIDENTS.
- PUBLIC SPACE PREVALENT
- PLENTY OF OLDER HOUSING UNITS
- WATER MANAGEMENT IS AVERAGE

VANCOUVER: 3.83/5

SINGAPORE: 3.33/5

REFLECTIONS

CHALLENGES AND GROWTH

- Data Gathering Process:
  - a. Issue: Shifting focus to municipal/city-state scale
  - b. Outcome: Broadened our perspectives on the diverse neighbourhoods present in cities
- Identification of Evaluation Metrics:
  - a. Issue: Considers potential ambiguity due to population distributions of resources
  - b. Outcome: Allowed us to create quantifiable and specific framework as a guide for cities

FUTURE OF COMPARATIVE URBANISM

- Global Collaboration
  - a. Foster knowledge sharing
  - b. Enable coordinated efforts
- Improved Quality of Life
  - a. Identify effective measures
  - b. Propose solutions based on past experiences
- Adaptation and Resilience
  - a. Study challenges and develop adaptive strategies

FUTURE HOUSING CHALLENGES AND TRENDS

- Demographic Trends and their Needs:
  - a. Aging Population
  - b. Younger couples with 1/no kids
  - c. Morphing family units
- Climate Trends:
  - a. Water Insecurity
  - b. Global Warming
  - c. Affordability (economic climate)

INSIGHTS

- Liveability and Blue-Green urbanism vary greatly depending on the population density of the city.
- Blue-green urbanism infrastructure generally found integrated into residential neighbourhoods planned in the 21st century.
- Physical environment has a large role to play in development of blue-green infrastructure.

COMPARISON OF POLICIES

	VANCOUVER	SINGAPORE
SAFETY AND QUALITY OF BUILDINGS	• Emphasizes seismic safety due to earthquake risks, comprehensive fire safety regulations, and stringent permitting and inspection processes.	• Enforces stringent safety standards through the BCA and HDB, with a focus on fire safety, structural integrity, and regular inspections.
SPACE & DENSITY	• Metro Vancouver's Regional Growth Strategy provides spatial designations that Municipalities can adopt, such as the Vancouver Plan. • Land is privately owned in Vancouver, and public housing developments can be rejected by municipalities.	• Policies guided by the Urban Redevelopment Authority (URA) Master Plan, which designates land use and sets guidelines for development intensity and building heights. • All land is owned by the state in Singapore
WATER MANAGE-MENT	Rain City Strategy and IRMPs which focuses on managing rainwater where it falls, as well as localised plans to manage rainwater and stormwater	Guided by the Active, Beautiful and Clean Waters (ABC) Programme, which encourages integration with urban design & stormwater management into residential

CONCLUSION

Regarding the future of comparative urbanism, we believe that a framework like ours can foster global collaboration, as it enables knowledge sharing between cities which can allow for co-ordinated efforts. Furthermore, the improved quality of life through the identification of effective measures can allow cities to propose solutions based on past successes and failures of other cities. Such comparative studies allow for greater adaptive strategies that, in turn, foster resilience.

REFERENCES

Areavibes. (2024a, July 8). Downtown Eastside, Vancouver, BC Demographics. Downtown Eastside, British Columbia Population & Demographics. https://www.areavibes.com/vancouver-bc/downtowWn+eastside/demographics/

Areavibes. (2024b, July 8). Olympic Village, Vancouver, BC Demographics. Olympic Village, British Columbia Population & Demographics. https://www.areavibes.com/vancouver-bc/olympic+village/demographics/

BC Housing. (2024, July 8). Glossary. https://www.bchousing.org/glossary#:~:text=Affordable%20(housing)%3A%20Housing%20is,or%20benefit%20with%20BC%20Housing.

Begum, S. (2024, March 9). Household water consumption falls to pre-pandemic levels in 2023. The Straits Times. https://www.straitstimes.com/singapore/household-water-consumption-falls-to-pre-pandemic-levels-in-2023

Berry, B. J., & Okulicz-Kozaryn, A. (2011). An urban-rural happiness gradient. Urban Geography, 32(6), 871–883. https://doi.org/10.2747/0272-3638.32.6.871

Bridge Electric Corp. (2016, July 18). Vancouver olympic village – parcels 2 & 9. Bridge Electric. https://bridgeelectric.com/project/vancouver-olympic-village/

Browning, M., & Lee, K. (2017, June 23). Within what distance does "greenness" best predict physical health? A systematic review of articles with GIS buffer analyses across the lifespan. International journal of environmental research and public health. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5551113/

Central Provident Fund Board. (2024, July 19). CPFB: How much do I need to buy a Home?. Central Provident Fund Board (CPFB). https://www.cpf.gov.sg/member/infohub/educational-resources/housing-ratios-calculations-msr-tdsr

Chen, W. H. (2024, July 19). Assessing the quality of OpenStreetMap building data in ... https://ual.sg/publication/2020-osm-sg-building-quality/2020-osm-sg-building-quality.pdf

City of Vancouver. (2024, July 19). VanMap Viewer. ArcGIS web application. https://maps.vancouver.ca/vanmap-viewer/

City Population. (2024, July 19). Asia. (Planning Areas and Subzones) - Population Statistics, Charts and Map. https://www.citypopulation.de/en/singapore/admin/

database.earth. (2024, July 19). Population of singapore 1950-2024 & future projections. https://database.earth/population/singapore

Dijkstra, L., Hamilton, E., Lall, S., & Wahba, S. (2020, March 10). How do we define cities, towns, and rural areas?. World Bank Blogs. https://blogs.worldbank.org/en/sustainablecities/how-do-we-define-cities-towns-and-rural-area

Environmental Accounts, S. of. (2024, July 8). Greenhouse gas emissions from Sweden's economy increased in 2021. Statistics Sweden. https://www.scb.se/en/finding-statistics/statistics-by-subject-area/environment/environmental-accounts-and-sustainable-development/system-of-environmental-and-economic-accounts/pong/statistical-news/environmental-accounts---emissions-to-air-q4-2021/

Environmental Reporting, B. (2016, December 30). Sustainability. GHG Emissions - Environmental Reporting BC. https://www.env.gov.bc.ca/soe/indicators/sustainability/ghg-emissions.html

Houseful. (2024a, July 8). Downtown Eastside, BC Housing Market & Real Estate Trends. https://www.houseful.ca/market-trends/vancouver-bc/downtown-eastside/

Houseful. (2024b, July 8). Olympic Village, BC Housing Market & Real Estate Trends. https://www.houseful.ca/market-trends/vancouver-bc/olympic-village/

The Housing Registry. (2024, July 19). Affordable housing. https://www.bchousing.org/publications/Zone-1-7-Housing-Options-for-Singles-and-Couples.pdf

Krause, K., & Jussinoja, K. (2023, October 26). Mortgages far out of reach for median income earners in Vancouver: Report. CTV news. https://bc.ctvnews.ca/mortgages-far-out-of-reach-for-median-income-earners-in-vancouver-report-1.6619322

Laura Jamieson Housing Cooperative. (2024, July 19). Our building. Laura Jamieson Coop. https://www.ljhc.ca/copy-of-about

McClelland, B. (2024, April 26). The world's greenest countries 2024: Greenmatch. GreenMatch.co.uk. https://www.greenmatch.co.uk/blog/greenest-countries

MountainMath. (2024, July 8). Vancouver assessment map. https://mountainmath.ca/map/assessment?zoom=14&lat=49.2623&lng=-123.0982&layer=7&mapBase=3

Northwest Hydraulic Consultants. (2014, December). City of Vancouver coastal flood risk ... City of Vancouver. https://vancouver.ca/files/cov/CFRA-Phase-1-Final_Report.pdf

Ritchie, H., Rosado, P., & Roser, M. (2023, December 28). CO2 and greenhouse gas emissions. Our World in Data. https://ourworldindata.org/co2-and-greenhouse-gas-emissions#co2-and-greenhouse-gas-emissions-country-profiles

Ritchie, H., Roser, M., & Rosado, P. (2020a, May 11). Canada: CO2 Country Profile. Our World in Data. https://ourworldindata.org/co2/country/canada

Ritchie, H., Roser, M., & Rosado, P. (2020b, May 11). Kuwait: CO2 Country Profile. Our World in Data. https://ourworldindata.org/co2/country/kuwait

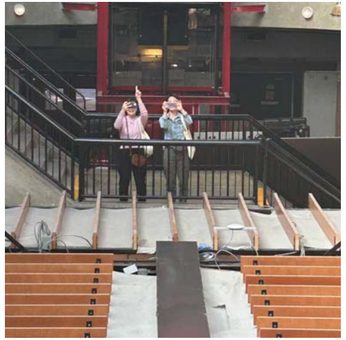
Ritchie, H., Roser, M., & Rosado, P. (2020c, May 11). Singapore: CO2 country profile. Our World in Data. https://ourworldindata.org/co2/country/singapore

Russo, A., & Cirella, G. T. (2018, October 5). Modern compact cities: How much greenery do we need?. International journal of environmental research and public health. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6209905/

Still Creek Housing Cooperative. (2024, July 19). About Us. https://www.stillcreekcoop.com/coop/about-us/

Water Services Department. (2023, May). 2021 water consumption statistics report. metrovancouver. https://metrovancouver.org/services/water/Documents/water-consumption-statistics-report-2021.pdf

Westerhoff, L. M. (2016, November 9). Emerging narratives of a sustainable urban neighbourhood: The case ... Articulo - Journal of Urban Research. https://journals.openedition.org/articulo/2974



TEACHING TEAM REFLECTIONS

REFLECTING ON THE STUDENTS' PROJECTS, WHAT WERE THE MOST SURPRISING OR INSIGHTFUL OBSERVATIONS ABOUT THEIR COMPARATIVE URBANISM WORK?

Su-Jan:
The students impressed me by approaching the project from such diverse angles, showcasing an eagerness to explore the themes broadly and freely. Their interests included urban agriculture, water-based recreation, neighborhood playscapes, and water management infrastructure to name a few, highlighting the many intersections of liveability and blue-green systems in the built environment. What stood out most to me was the students' abilities to develop and apply unique comparative analysis frameworks—from complex metrics and adapted Venn diagrams to the innovative use of metaphors and character personas—demonstrating both creativity and methodological versatility.

Rosita:
Students from diverse disciplinary backgrounds made the 2024 NUS-UBC cohort; they brought diverse knowledge of urban concepts and projects into the programme. To my surprise, amidst such a heavily-packed timetable, the students demonstrated their ability to work together despite the differences and were able to fill in the gaps to deliver good project outcomes. Their attempts in 'doing' comparative studies were beyond expectation; their analysis and creativity showed multiple layers to understand 'liveability' and 'blue-green urbanism'. It was also really encouraging to observe how students bonded and developed their own way of peer-learning.

Rosita:
There were times that I thought we might have assigned too high expectations in terms of deliverables. We would like students to learn but also explore places when they were in Vancouver and Singapore. In addition, expectedly, there were sometimes different perspectives among the teaching team. The chaotic moments between programme deliverables, super tight timetable, and differing voices, nevertheless, became the hallmark of this programme. The students were able to establish critical and creative ways in synergising the differences while bringing into the project their own perspectives. Looking back, I valued the frictions and insights emerged during the programme, including many hours of discussions during the preparation stage; this had shown what a true collaboration was about.

Su-Jan:
During project consultation sessions with students, Rosita and I often found ourselves offering differing perspectives in response to their questions. I was concerned that these divergences would create confusion or complicate their progress. However, the students navigated these moments of intellectual friction with remarkable maturity, demonstrating independent thinking as they synthesised our input. While I can't be certain of the extent to which our insights shaped their work, I hope that witnessing our critical thinking process encouraged them to develop their own problem-solving skills.

WERE THERE ANY STANDOUT EXPERIENCES OF CREATIVE SYNERGY, PEDAGOGICAL FRICTION, OR UNEXPECTED INSIGHTS THAT BECAME DEFINING MOMENTS?

HOW DID COLLABORATING ACROSS GEOGRAPHIC AND INSTITUTIONAL BOUNDARIES ENRICH YOUR GLOBAL PERSPECTIVES ON URBANISM AND INFLUENCE YOUR TEACHING PRACTICE?

Su-Jan:
Engaging with diverse urban settings and collaborating with international colleagues deepened my appreciation for the varied ways through which cities and institutions function across cultural and political landscapes. Teaching urbanism through a global lens and with global partners reinforced my belief in the value of learning beyond borders. It also pushed me to find new ways of incorporating a multi-scalar, multi-modal perspective into my teaching.

Rosita:
This collaboration demonstrated the importance of dialogues and discussions between colleagues and students across disciplines and geographical contexts. Vancouver and Singapore have its own uniqueness in shaping liveability through blue and green initiatives. The perspectives learned from the two cities and this programme shaped further my teaching practices on urbanism; that teaching/learning about cities is beyond building knowledge and analytical skills but also cultivating empathy to people, land, and the knowledge itself. This collaboration challenges my creativity in appreciating and integrating such diverse perspectives into my teaching pedagogy.

Rosita:
There were challenges Su-Jan and I faced in this collaboration; especially in coordinating the programme over different time zones and institutions. There were times when we felt overwhelmed with many moving parts and in managing unfamiliar expectations. But, those challenges made our collaboration (and friendship) stronger. We started to understand each other's strengths and gaps and helped each other out. I guess the best song that resonates with our experience is "You've Got A Friend in Me".

Su-Jan:
As this was our first foray at co-teaching—and more so within the new context of a reciprocal learning exchange and pilot program—Rosita and I initially saw an enormous mountain ahead of us. However, as things gradually fell into place, we found our rhythm, gaining the courage and confidence to climb. “Ain’t No Mountain High Enough” seems like a fitting theme song that captures our dynamic journey!

WHAT WOULD BE A THEME SONG THAT REPRESENTS YOUR CO-TEACHING DYNAMIC?

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