

Urban wilderness and human-wildlife boundaries

Despite Hong Kong's iconic high-density city status, it has a surprising amount of wilderness. How you define wilderness is debatable. In the end it depends on the purpose for so doing and the data used for classification. One measure that stands the reasonableness test is biodiversity. A wilderness is likely to have a richer natural ecosystem, supporting greater diversity, unless perhaps it is mono-culture pine forest wilderness.

Hong Kong's green areas are definitely not homogeneous in respect to wildlife. They host 55 species of terrestrial mammals, 550 species of bird (1/3rd of all bird species recorded across China), 90 species of reptile (9 of which are highly venomous), 24 species of amphibian and over 30,000 species of invertebrates, as well as hundreds of marine species found along Hong Kong's coastline [1]. Asia's financial hub and global city also remarkably retains two endangered mammal species: the Chinese pangolin and the Chinese white dolphin (pink river dolphin), not to mention the endangered (invasive species) yellow-crested cockatoos that disturb the early evening peace of HKU campus with their screeches.

The main habitat making Hong Kong's wildlife diversity possible is a rugged island coastline and 24 country parks covering an area of 443 km². That's an average of 18 km² per park, large for a territory about 70% the area of Greater London and noting that London's largest park is Richmond Park at about 10 km². Each of Hong Kong's country parks has a well-developed water irrigation system, with catchwaters and natural stream systems that filter into 30+ reservoirs spread across the territory's landscape. The catchment systems create physical barriers for wildlife, are important localised habitats for semi-aquatic species, and act as watering holes for larger species of mammals, reptiles and birds. On a night walk in the feeder streams to one of the larger reservoirs, your bloggers recently found over 20 snakes within a very small area, most of them the highly venomous many-banded krait. A few weeks

1. HKSAR Environment Bureau (2016). *Hong Kong Biodiversity Strategy and Action Plan 2016–2021*. The Government of the Hong Kong Special Administrative Region: Hong Kong, China.

earlier it was a Burmese python, king cobra – and more kraits. Not far away from the watering-hole there were rhesus macaque monkeys fighting with a large male wild boar over a pile of neatly cut-out bread crusts dumped by a producer of lunch-time sandwiches for the city's workers.

The question arises, what is it about Hong Kong that allows such a high density of wilderness fauna, so close to 7 million people? And could the result be replicated by landscape planning and design? One way of doing so would be to physically engineer barriers between human and wild ecosystems. That's the approach of game reserves, urban zoos, back gardens and Jurassic Park. Regulations might work, but only on people movement, not wild animals, and only at high policing costs. Actually, Hong Kong's successful wilderness areas are arguably down to two factors, which could reasonably be hypothesised to be general factors: size and steepness. Area and topography make for wilderness. Take away one of these and wilderness complexity and integrity breaks down. A very steep slope on a small area, might have its own kind of wilderness ecology because the inaccessibility means complex natural interspecies competition can happen without human disturbance. But the wilderness is at a very small scale and of limited natural system complexity. So, as a general rule, topography without area does not create urban wilderness. Area without topography also means no wilderness. Even if regulations try to limit access, a large and relatively flat patch of urban greenery will be invaded by humans. So topography and area are compensating factors in producing wilderness. We could guess that they are not linearly combined in the wilderness production process (most production factors combine in a multiplicative sense to create a product). So, wilderness = $f(\text{area, topography})$, perhaps in a Cobb-Douglas production function: $W = KA^\beta T^\alpha$, where W is degree of wilderness, A is area of park, T is topography of park, K is a constant reflecting the specifics of a particular park system, and beta and alpha are exponents that capture the natural multiplicative interaction between size and topography in creating the eco-system complexity required for wilderness.

Empirical scientific questions that arise include: is there a threshold size of park for different grades of wilderness?; what are the different sizes and kinds of green wilderness in cities for a given climate zone or in a particular city?; for flat topography semi-wilderness urban parks, are there wilderness gradation zones following accessibility contours around surrounding roads and access points?; and so on.

Landscape design and planning questions include: can any of these dynamics be recreated by design? (Note that Hong Kong's water catchments were originally designed by 19th century civil engineers); what management and hard design features need to be included into a designed green space to create or preserve a degree of eco-system complexity and wilderness?; if you are designing a large green area in a city, how would you optimise for wilderness by choice of access points, paths and planting regimes? (Note to research this you would need as an input into your landscape design, an ecological systems model, or at least, a partial systems model that predicts animal movement – see the work of our landscape architect colleague Ashley Kelly with WWF in Myanmar [HERE](#)).

Chris Webster

(adapted from a conversation with Sam Webster, MRes student, UCL)

More from the Dean on this...

For some reason, my offspring have followed natural science interests and spurned their father's fascination with cities. But there are still issues to discuss. One of my favourites is urban wilderness. Inspired by a conversation with Sam, who is now studying evolutionary biology at UCL, I would like to propose a series of Dean's Roundups, perhaps 3 or 4 over the next 12 months, focusing on urban wilderness science and design issues, and co-written by staff and student collaborators. Today's DRup blog shares a few thoughts to kick things off. I invite anyone who wants to write a blog to get in touch with me with a theme, co-opting any bachelors, masters or PhD co-writers who you think would offer stimulating and challenging insights.

As well as the intrinsic importance of the topic, it would be good to have some wide-ranging sharing of big-picture issues and research questions in the urban landscape design, planning and science domain. Over the next 12 months FoA will be developing a strategic agenda for its landscape programme. We will invite international landscape architecture and landscape science leaders and practitioners to help us with this. It is an exciting prospect, and a chance to share landscape-related scholarship across the Faculty and across the university. Two of HKU's new research institutes (Urban Systems Institute and Institute for Climate and Carbon Neutrality) have a profound interest in urban greening, and if we also decide to create a design-focused institute at university level, that too will benefit from an intellectual landscape agenda in HKU's faculties, FoA in particular. So, consider this to be an agenda-exploring conversation as well as a regular DRup think-piece.

Other possible topics for future teacher-student authored conversation-starting wilderness blogs: mapping human-wilderness boundaries in cities around the world – how might we do it and what might it tell us?; what difference does shape make (should the above expression be $W = KA^\beta T^a S^g$ to include shape)?; how is urban wilderness perceived and used by humans?; can urban wilderness be sustained by rotational husbandry, as in old fashioned farming?; what's the smallest urban wilderness buildable?; how to maintain parts of the city-ocean boundary as wilderness?; can a network of small green spaces develop the eco-system complexity required of a wilderness?; how could you protect the narrow connecting links?; and can the natural linear wildernesses found along rail and road corridors in cities across the world, be linked to create larger wilderness systems and how does network topology influence biodiversity and wilderness outcomes?.



Congratulations to colleagues mentioned below for your amazing achievements, as always.


Chris Webster
Dean, FoA

Faculty of Architecture

1. New colleagues

- A warm welcome to the following new colleagues, who joined our Faculty in October 2022:

	<p>Dr Cui GUO</p> <p>Assistant Professor Department of Urban Planning and Design</p> <p>Dr Guo obtained her PhD from the Chinese University of Hong Kong. Her teaching and research interests include Environmental Epidemiology, Public Health, and Biostatistics. She has published more than 50 articles in prestigious, peer-reviewed journals. Dr Guo is also a guest editor of <i>Atmosphere</i>, a member of the topical advisory panel for <i>Pollutants</i>, and a member of the International Biometric Society.</p> <p>Dr Guo is transferring her project, titled 'Early-life Exposure to Air Pollution and Chronic Health Conditions in Later Life: A Longitudinal Cohort Study', from the Chinese University of Hong Kong to the University of Hong Kong. More details on page 28.</p>
	<p>Dr Si QIAO</p> <p>Post-doctoral Fellow Department of Urban Planning and Design</p> <p>Dr Qiao received her PhD from the University of Hong Kong. Her research explores how the emerging digital turn will revolutionise individual and collective mobility as well as their living, with a focus on platformisation in transport and housing. Under the supervision of Professor Anthony Yeh, her current research at DUPAD concerns spatial justice and social inequality as the consequences of platformisation in the complex urban system bundle of mobility, transport, and housing, in the way of agent-based simulation by integrating big data and small data.</p>

	<p>Dr Chang XIA</p> <p>Post-doctoral Fellow Department of Urban Planning and Design</p> <p>Dr Xia holds a BEng and a MSc from Wuhan University, and a PhD from the University of Hong Kong. His research interests include geographies of mobility and computational urban design, focusing on the application of new data and methods in urban planning and management, while contributing to urban sustainability through leveraging the advancements in timely urban datasets and geographical information science (GIS). Under the supervision of Professor Anthony Yeh, he is working on projects concerning modelling and promoting Hong Kong residents' cross-border mobility and healthcare utilisation in the Greater Bay Area.</p>
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2. NSFC Young Scientists Fund 2022

- Congratulations to the following five members of the Faculty, who are among the 16 awardees at HKU to have received the National Natural Science Foundation of China's (NSFC) Young Scientists Fund 2022 for their wide-ranging research projects:

(i) Dr Bin Chen

Assistant Professor, Division of Landscape Architecture

Project: 'Parcel-based Urban Land Use Classification Using Domain Adaptations of Sample, Feature and Model'

Abstract: *Fine-resolution parcel-level urban land use classification data can accurately reflect the distribution, composition, and pattern of urban land use categories. It is an important basis and prerequisite for research in urban planning, land management, landscape design, public health, and sustainable development. However, the existing research on urban land use classification is still limited by critical problems such as the 'time-consuming and labour-intensive sample collection strategies', 'lack of multi-source data and model fusion', and 'limited transferability and generalisation of features and models'. These challenges seriously barricade the efficiency of sample collection, the accuracy of the classification method, and the adaptation of the model, leading to large uncertainties of the land use classification products. This project will target the mapping logic from sample to data, feature, and model to*

inform these issues. First, based on the semi-supervised learning framework, we will integrate crowdsourcing geographic information and expert knowledge to develop an automatic sample labelling method to achieve an efficient collection of high-quality samples. We will then leverage deep learning methods to extract the deep semantic features of multi-source remote sensing and social sensing big data and propose a multi-model integrated learning framework to derive the stable mapping protocol of urban land use classification. Finally, we will leverage transfer learning to construct a domain adaptation scheme of features and models to realise the adaptive urban land use classification across different cities in China.

(ii) Dr Jun Ma

Assistant Professor, Department of Urban Planning and Design

Project: 'Analysis of the Spatiotemporal Distribution of Roadside Ultrafine Particles and its Influential Factors in Urban Central District'

Abstract: *Ultrafine particles (UFPs) refers to particulate matters with less than one micron in diameter and is also known as the lung accessible particles. In recent years, growing numbers of literature reported evidence that UFP has a worse impact on human health than PM_{2.5} and PM₁₀ as it is smaller and thus easier to invade into human organs. To better manage the UFP pollutions, it is critical to study its spatiotemporal distribution and influential factors across the city. However, related studies are still lacking, especially on the roadside areas in urban central districts. The adjacency to road traffic and dense pedestrians put the roadside region at high exposure risk. To narrow the research gaps, this study aims at developing a methodology framework to analyse the spatiotemporal distribution of roadside UFPs and its influential factors based on mobile monitoring and deep learning techniques. Related discoveries are expected to provide actionable suggestions to local air pollution management.*

(iii) Dr Shuai Shi

Assistant Professor, Department of Real Estate and Construction

Project: 'The Spatial Generating Mechanism and Systematic Synergies of Urban Network Capital'

Abstract: *Unveiling the underlying spatial mechanism of urban development is one of the fundamental issues for urban geography research. In recent years, the network economies theory (NET) has become the frontier theory in exploring the new paths of urban development. The NET investigates the cross-territorial economic networks overriding spatial constraints and sheds light on the underlying mechanism of inter-city synergies. However, intertwined with the*

diversification of economic relations and the increasing heterogeneity of urban development models, the complexity of urban economic networks is substantially strengthened, which hinders our understanding capability for the generating and operating mechanism of network systems. This project follows the frontier of urban network research and addresses the complexity issue of network systems. First, we use corporate mergers and acquisitions (M&As) and patent collaborations as flow metrics to establish urban capital flow network and urban knowledge flow network respectively. The spatial-temporal patterns and structural characteristics of the two urban networks are then investigated. Second, exponential family random graph model (ERGM) is employed to discover key contributors to network formation. Third, unsupervised restricted Boltzmann machine (RBM) is employed to construct the interactive model between the two urban networks, which aims at unravelling their systematic synergies. The innovations of this project are attributed to theoretical explorations and network models. Additionally, this project facilitates the interdisciplinary research of urban geography and network science. The expected findings will enhance the understanding of the complexity issue of urban networks and provide policy implications for urban synergetic development and the coordination between financial supervision and industrial innovation policies.

(iv) Dr Zhan Zhao

Assistant Professor, Department of Urban Planning and Design

Project: 'Generalisable Deep Learning Across Cities and Modes for Human Mobility Prediction'

Abstract: *The modelling and prediction of human mobility plays an important role in diverse applications such as urban planning, economic development and infectious disease prevention. This requires accurate and reliable mathematical models to describe the effect of urban environment on human mobility, and predict the behaviour changes under different planning scenarios. Classical methods are mostly dependent on physical and economic models, which are simple but constrained by their theoretical assumptions. Deep learning methods have been shown to achieve superior predictive performance, but are often lacking generalisability to new and unseen scenarios. It remains an important, and yet unresolved, scientific problem to improve the generalisability of deep learning, particularly for the prediction and understanding of human mobility in different cities via different transportation modes. This project will explore the generalisability of deep learning for human mobility prediction across cities and modes, and propose new solutions. The main idea is to learn the hidden relationships between cities and modes using diverse data sources, based on which we will develop models that can share knowledge across*

different prediction scenarios and discover universal travel patterns and behavioural mechanisms, overcoming the generalisability limitations of existing methods. The specific model design will combine emerging techniques from meta learning, domain adaptation, and region matching, and be demonstrated in the prediction of origin-destination flows across cities and modes as well as route choices across cities.

(v) Dr Jin Zhu

Assistant Professor, Department of Real Estate and Construction,
Department of Urban Planning and Design

Project: 'Spatial Patterns, Formation Mechanisms and Planning Strategies for Residential Spaces Around Rail Transit Stations on the Peripheries of Chinese Megacities: A Case Study of Shanghai and Hong Kong'

Abstract: *The spatial pattern and development performance of the residential spaces around rail transit nodes have a direct impact on the spatial structure of megacities and can significantly influence the overall spatial development. The lack of studies to date addressing the spatial pattern and formation mechanisms of the residential spaces around rail transit nodes and the lack of targeted planning strategies have hindered high-quality spatial expansion and the efficient operation of the spatial structure of megacities. Investigating the suburbs of Shanghai and Hong Kong as examples, the present study analyses the spatial pattern and mechanisms behind the formation of residential spaces around rail transit nodes and puts forward some ideas for planning strategies. The study first assesses the various types of residential land use around rail transit nodes, including market-led commercial residential space, government-led subsidised residential space and residual villages drawing upon multiple data sources. Then, the spatial forms and functions of residential spaces, the accommodated populations, the job-housing structure and the impact on the urban spatial structure are then assessed with multiple approaches, including morphology measurements, big data analyses, questionnaire surveys and regression analyses, to explore the spatial patterns and development performance of residential spaces around rail transit nodes. The causes and mechanisms are then analysed from three perspectives, being those of the government, market and individuals. Finally, based on the acquired understanding of the pattern and laws governing the spatial development of rail transit nodes, optimisation paths and planning strategies are proposed for multiple scales. This research can serve as a theoretical and technical guide to the planning and design of rail transit nodes in megacities and the governance of the multiple residential spaces around such nodes.*

3. World's Top 2% Scientists by Citation

- Ten FoA members have been ranked in the world's top 2% most-cited scientists in their respective fields, measured by long-term and single-year performance.

The scholars were ranked in the Updated Science-wide Author Databases of Standardized Citation Indicators, compiled by a research team at Stanford University and led by Professor John Ioannidis. It is a database of top scientists across the world, created according to standardised citation indicators, including h-index, co-authorship adjusted hm-index, citations to papers in different authorship positions, etc. The latest dataset is based on the 1 September 2022 snapshot from Scopus and is updated to citation year 2021.

Citation data as of 2021 (long-term performance)			
Name	Rank (self-citation excluded)	Position	Department
Anthony Yeh	40,291	Professor	DUPAD
Chris Webster	51,814	Dean and Professor	FoA/DUPAD
Wilson Lu	82,958	Professor	REC
Shenjing He	90,568	Professor	DUPAD
Steve Rowlinson	129,755	Emeritus Professor	REC
K. W. Chau	136,588	Professor	REC
Jiangping Zhou	207,810	Associate Professor	DUPAD
Lawrence Lai	254,408	Professor	REC

Citation data in 2021 (single-year performance)			
Name	Rank (self-citation excluded)	Position	Department
Wilson Lu	10,802	Professor	REC
Shenjing He	19,827	Professor	DUPAD
Chris Webster	38,353	Dean and Professor	FoA/DUPAD
Xingjian Liu	43,730	Associate Professor	DUPAD
Jiangping Zhou	50,715	Associate Professor	DUPAD
Anthony Yeh	50,899	Professor	DUPAD
Chinmoy Sarkar	53,078	Associate Professor	DUPAD
Steve Rowlinson	82,719	Emeritus Professor	REC
K. W. Chau	89,918	Professor	REC

More information:

<https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/4>

4. Dr Junjie Chen (RAP, REC), Mr Jinfeng Lou (PhD Year 3 student, REC) and Mr Maosu Li (PhD Year 3 student, DUPAD)
 - presented a research project led by Professor Anthony Yeh, Professor Wilson Lu, Dr Frank Xue and Mr K L Tam (HKU Estates Office) at the 'Construction R&D Forum – Bringing Applied R&D to New Heights', to Mr Paul Chan Mo-po, Financial Secretary of Hong Kong, among other government officials and industry representatives, on 4 November 2022, at Grand Hyatt Hong Kong.

Project: A MiC Digital Transformation Trilogic Solution

Summary: *Modular integrated Construction (MiC) is a game-changing innovation to address the many challenges related to Hong Kong's construction industry, e.g., declining productivity, escalating cost, unsatisfactory safety record, and aging labour force. However, its power*

cannot be fully harnessed without the processes being digitally transformed. This research project aims to develop a trilogy of MiC digital transformation solution by focusing on its offsite fabrication ('factory'), cross-border logistics ('road'), and onsite assembly ('site'). The final product is formed by three apps organised on a BIM-blockchain enabled platform:

- *e-InStar: For remote e-inspection of MiC quality in factory;*
- *e-TranStar: For e-monitoring MiC logistics on road; and*
- *e-InstallStar: For e-planning and monitoring MiC installation.*

All the information will be simultaneously displayed in web BIM, kept in a database, and safeguarded in a blockchain system.

Jointly organised by the Development Bureau and the University-Government-Industry Consortium, the Construction R&D Forum brought together leaders from the Government, Universities and the construction industry to promote the importance of applied R&D to enhance industry performance for the future construction volume and challenges.



5. HKU Information Day for Undergraduate Admissions 2022

- was held successfully on campus on 29 October 2022, featuring a series of engaging admissions activities to promote our undergraduate programmes to prospective students and their teachers and parents, including talks, guided department/campus tours, students and alumni sharing, open houses with teachers, exhibitions and Q&A sessions.



BSc(Surv) Alumni Sharing



BA(US) Admissions Talk



BA(AS) & BAsC(Design+)
Admissions Talk



BA(LS) Campus Design Explorations –
Open Space Tour

More information:

<https://www.arch.hku.hk/event/information-day-2022/>

Department of Architecture

1. Public Lecture Series, Fall 2022

- explores the theme of 'Action/Reaction', which comes from film and theatre, COVID and the unexpected events that suddenly appear in the world that we must then address; features the following guest speakers:
 - (i) Joanlin Au (Director, JA Design Architects)
'The Art of Hunting: Architecture, Nature and Culture'
Tuesday, 25 October 2022, 6:30pm
 - (ii) Elva Tang and Claude Godefroy (Founding Partner and Director, Henning Larsen Hong Kong)
'Can Architecture be Part of the Solution?'
Friday, 28 October 2022, 6:30pm
 - (iii) Sara Klomps (Director, Zaha Hadid Architects)
'Architecture is Always More Than Just a Building'
Friday, 4 November 2022, 6:30pm
 - (iv) Clover Lee (Founder and Director, plusClover)
'AMASS'
Friday, 11 November 2022, 6:30pm
 - (v) Donald Choi (CEO, Chinachem Group; President, Hong Kong Institute of Architects)
'Architecture for Social Impact'
Tuesday, 15 November 2022, 6:30pm



More information: www.arch.hku.hk/event/fall-2022-public-lecture-series/

2. Research Seminar Series, Fall 2022

- Sony Devabhaktuni delivered a seminar titled 'Walking as Infrastructural Practice' on 3 November 2022, with Dr Xiaoxuan Lu (DLA) as the Discussant:

Abstract: *Walking has long been a method for writers, artists and architects to engage with the city. From the flaneur to the heritage tour, the way we move through the city acts to witness, organize, appropriate or critique urban relations. The talk uses infrastructure as a lens through which to consider the practice of walking. I first discuss the historical origin of infrastructure and its relation to military provisioning. These origins have been important to modernist understandings of infrastructure's relation to nation-building and to ideas about the future. Next, I turn to contemporary understanding of infrastructure as the care and maintenance of a commons. This discussion on what exactly infrastructure is, serves as the basis for looking more closely at three practices of walking: Franz Hessel's early 20th century literary account *Walking in Berlin*, the poet Lisa Roberson's *Seven Walks* and the artist Sampson Wong's *When in Doubt Take a Walk*. These accounts respond to the modernist, neo-liberal, and authoritarian city, respectively, but ultimately transcend their contemporary conjunctures to propose openings toward new sets of relations. I argue that walking in these works is an infrastructural practice. It reveals the ground of the city to be a commons, where the provisioning of life takes place through relations enacted in movement. Importantly, this re-inscription understands heritage as an offering to the future.*



THU 3 NOV 2022

**Walking as
Infrastructural
Practice**

Sony Devabhaktuni
Assistant Professor
Department of Architecture

Discussant: Dr. Xiaoxuan Lu
Assistant Professor
Division of Landscape Architecture

Walking has long been a method for writers, artists and architects to engage with the city. From the flaneur to the heritage tour, the way we move through the city acts to witness, organize, appropriate or critique urban relations. The talk uses infrastructure as a lens through which to consider the practice of walking. I first discuss the historical origin of infrastructure and its relation to military provisioning. These origins have been important to modernist understandings of infrastructure's relation to nation-building and to ideas about the future. Next, I turn to contemporary understanding of infrastructure as the care and maintenance of a commons. This discussion on what exactly infrastructure is, serves as the basis for looking more closely at three practices of walking: Franz Hessel's early 20th century literary account *Walking in Berlin*, the poet Lisa Roberson's *Seven Walks* and the artist Sampson Wong's *When in Doubt Take a Walk*. These accounts respond to the modernist, neo-liberal, and authoritarian city, respectively, but ultimately transcend their contemporary conjunctures to propose openings toward new sets of relations. I argue that walking in these works is an infrastructural practice. It reveals the ground of the city to be a commons, where the provisioning of life takes place through relations enacted in movement. Importantly, this re-inscription understands heritage as an offering to the future.

**The University of Hong Kong
Department of Architecture
Research Seminar Series
Fall 2022**

12:45 — 14:00
KB719, Knowles Building

DLA sponsored and co-located
Seminar: Planning for 2030

Sony Devabhaktuni is an assistant professor in the Department of Architecture. His research and teaching focuses on urban infrastructure and at collaborative processes in architectural design. He is particularly interested in how economic and political intensities overlap with imaginations of space.

Division of Landscape Architecture

3. Ms Vincci Mak

- co-published 「華富邨研究系列」 (Wah Fu Estate Research Series) in *Ming Pao* with Dr Gary Wong of the University of Leeds in July-August 2022. It is a series of four newspaper articles to disseminate research findings to everyday readers, with topics including how the concept of town centre brings a community together; how to design an ideal home under new planning; everyday accessibility and transect as a journey; and the sustainability of everyday memory.

	<p>31 July 2022:</p> <p><u>【一幢大樓滿足所有願望「市鎮中心」何以能凝聚社區？】</u></p>
	<p>7 August 2022:</p> <p><u>【單位與大廈設計之間新規劃如何創造理想家園？】</u></p>



14 August 2022:

[【街坊分享起居路線記錄流動與停頓】](#)



21 August 2022:

[【細數涼亭燜燒煲背後故事延續華富日常記憶】](#)

Department of Real Estate and Construction

1. Professor K.W. Chau

- served as a moderator on one of the discussion panels at the HKIS GPD Annual Conference 2022, entitled 'Land Supply in the New Territories: New Opportunities', on 15 October 2022. Ten BSc(Surveying) students were also invited by Sr Alexander Lam, Vice Chairman of the General Practice Division of the Hong Kong Institute of Surveyors, to attend the Conference. Speakers included Mrs Regina Ip GBM GBS JP, Convenor of the Executive Council, among other government officials and leading experts in the field.



Professor K.W. Chau (far left) served as a moderator on a discussion panel



Ten BSc(Surveying) students joined the Conference with Professor K.W. Chau and Dr Lennon Choy

2. MSc(RE) students

- attended a group mentoring session organised by the Urban Land Institute (ULI) on 4 November 2022, in which industry professionals shared their insights on the industry's most pressing issues, including the macro-economic trends, rental housing environment, ESG and PropTech.



3. BSc(Surveying) Year 2 students

- joined a guided tour on 6 October 2022 to the 'Envisioning Beyond Legacy' exhibition, co-presented by the Development Bureau and the Planning Department, at the City Gallery and the adjoining Edinburgh Place in Central. The tour was organised as part of the studio course RECO2036 Development Issues (course coordinator: Mr Ka-sing Yu).

Under the theme of 'Building a New Era for Hong Kong', the exhibition showcases the planning and infrastructure of the city, featuring various development highlights including the Northern Metropolis, urban revitalisation, etc.



4. Professor Kelvin Wong

- has been reappointed by the RGC to serve on the Engineering Panel (GRF and other funding schemes for individual research) for another two years, until 30 June 2024.
- has been reappointed by the University Senate to serve on the Academic Board for another two years, until 31 August 2024.

5. Research Seminar Series

- Dr Maggie Hu, Assistant Professor at the Business School of The Chinese University of Hong Kong, was invited to present her research on 'Tobin Tax Policy, Housing Speculation, and Property Market Dynamics', on 19 October 2022 via Zoom.

Abstract: Hong Kong introduced a Tobin property tax—the Special Stamp Duty (SSD) Policy—in 2010, which substantially increased the selling costs of short-term property holders. This study examines the effectiveness of this Tobin property tax in curbing speculation and cooling down the market. We find that SSD effectively curtails short-term speculations and reduces flippers' (holding period less than 2 years) market presence, which fell from 23.2% in 2009 to 2.4% in 2011 and 0.9% in 2013. However, 1 year after implementing the tax, the housing price shows an upward trend of 12.64% and 15.76% in the primary and secondary markets, respectively, indicating a lack of a market cooling effect. We show that flippers strategically defer sales to circumvent SSD charges, resulting in the sharp bunching of urgent sales immediately after the lock-in period ends. Further, SSD effectively increases selling costs and prolongs potential sellers' holding periods, thereby significantly reducing liquidity and driving up prices in the secondary market. We also document an unintended externality on market dynamics: the unmet housing demand from the secondary market triggers a buying frenzy into the primary market, which increases the prices in both markets. Our findings have policy implications for the viability of Tobin taxes for regulating real estate markets.

More information: https://www.arch.hku.hk/event/_tobin-tax-policy-housing-speculation-and-property-market-dynamics/

THE UNIVERSITY OF HONG KONG 香港大學
faculty of architecture 建築學院
Department of Real Estate and Construction
地產及建築系

REC Research Seminar Series
Tobin Tax Policy, Housing Speculation, and Property Market Dynamics

Oct 19, 2022 (WED)
4:30 – 6 pm (HKT)

SPEAKER:
Dr Maggie HU
Assistant Professor of Real Estate and Finance
Business School
The Chinese University of Hong Kong

Dr. Maggie Hu is currently an Assistant Professor of Real Estate and Finance at The Chinese University of Hong Kong. Her primary research interests include real estate economics, fintech, and empirical corporate finance. Her research has been published in leading finance and real estate journals, such as *Management Science*, *Journal of Financial and Quantitative Analysis*, and *Real Estate Economics*. She received her PhD in Finance in 2013 and Bachelor of Engineering Degree in 2008 from National University of Singapore.

ABSTRACT
Hong Kong introduced a Tobin property tax—the Special Stamp Duty (SSD) Policy—in 2010, which substantially increased the selling costs of short-term property holders. This study examines the effectiveness of this Tobin property tax in curbing speculation and cooling down the market. We find that SSD effectively curtails short-term speculations and reduces flippers' (holding period less than 2 years) market presence, which fell from 23.2% in 2009 to 2.4% in 2011 and 0.9% in 2013. However, 1 year after implementing the tax, the housing price shows an upward trend of 12.64% and 15.76% in the primary and secondary markets, respectively, indicating a lack of a market cooling effect. We show that flippers strategically defer sales to circumvent SSD charges, resulting in the sharp bunching of urgent sales immediately after the lock-in period ends. Further, SSD effectively increases selling costs and prolongs potential sellers' holding periods, thereby significantly reducing liquidity and driving up prices in the secondary market. We also document an unintended externality on market dynamics: the unmet housing demand from the secondary market triggers a buying frenzy into the primary market, which increases the prices in both markets. Our findings have policy implications for the viability of Tobin taxes for regulating real estate markets.

- Dr Wayne Wan, Lecturer (Assistant Professor) at the Department of Banking and Finance of Monash University, was invited to present his research on 'Corporate Relocation and Housing Market Spillover', on 26 October 2022 via Zoom.

Abstract: *Using a comprehensive database of corporate relocation events in the U.S. from 1994 to 2017, we investigate the impact of headquarters relocation on the local economy by examining its spillover effects on the housing market. We find that headquarters relocation into a district at Zip Code level leads to 10% higher housing price growth. We also document a temporal spillover effect whereby housing prices increase one year before the relocation and rise further until two years afterwards, and a significant spatial spillover effect of corporate relocation on nearby Zip Codes' housing markets up to 15 miles. We show the positive spillover effect on housing price growth is more pronounced for relocating firms with larger employee sizes and economic bases. We further find local economic spillover and agglomeration economies exacerbate the effect of corporate relocation on the housing market. Overall, our study indicates that corporate relocation exhibits significant impacts on the local housing market.*

More information: [https://www.arch.hku.hk/event /corporate-relocation-and-housing-market-spillover/](https://www.arch.hku.hk/event/corporate-relocation-and-housing-market-spillover/)

THE UNIVERSITY OF HONG KONG 香港大學
faculty of architecture 建築學院
Department of Real Estate and Construction 地產及建築學系

October 26, 2022 (Wed) | 4:30 – 6 pm (HKT)

REC Research Seminar Series

CORPORATE RELOCATION AND HOUSING MARKET SPILLOVER

QR code to register

SPEAKER
Dr. Wayne Wan
Lecturer (Assistant Professor)
Department of Banking and Finance
Monash University

ABSTRACT
Using a comprehensive database of corporate relocation events in the U.S. from 1994 to 2017, we investigate the impact of headquarters relocation on the local economy by examining its spillover effects on the housing market. We find that headquarters relocation into a district at Zip Code level leads to 10% higher housing price growth. We also document a temporal spillover effect whereby housing prices increase one year before the relocation and rise further until two years afterwards, and a significant spatial spillover effect of corporate relocation on nearby Zip Codes' housing markets up to 15 miles. We show the positive spillover effect on housing price growth is more pronounced for relocating firms with larger employee sizes and economic bases. We further find local economic spillover and agglomeration economies exacerbate the effect of corporate relocation on the housing market. Overall, our study indicates that corporate relocation exhibits significant impacts on the local housing market.

- Dr Xiaoling Chu, Post-doctoral Fellow of REC, and Ir Dr Alexander Zhou, Honorary Research Fellow of Imperial College London, were invited to present their research in the REC Brown-Bag Seminar Series, on 4 and 11 November 2022, respectively. More information: [www.arch.hku.hk/event /rec-research-brown-bag-seminar-series/](http://www.arch.hku.hk/event/rec-research-brown-bag-seminar-series/)

- (i) 'How do Political Connections Mitigate Policy Uncertainty? Evidence from Chinese Real Estate Firms', by Dr Xiaoling Chu:

Abstract: *This study investigates the value of political connections in protecting real estate firms under policy uncertainty. This study takes advantage of a novel approach by introducing a series of policy shocks as exogenous sources of uncertainty. Specifically, this study collects policy announcements regarding the real estate sector over the period of 2010 to 2016, and conducts an event study on how political connections mitigate the adverse effect of policy uncertainty. The findings show that political connections are positively associated with firms' cumulative abnormal returns under these policy shocks. This study further finds that the value of political connections is related to firms' information advantage and political influence in the environment of policy uncertainty. Moreover, a battery of robustness checks validates our findings.*

- (ii) 'Digital Delivery and Product Platforms: International Cases in Industrialized Construction and Implications to Projects', by Ir Dr Alexander Zhou

Abstract: *To tackle housing and health crises, and the long-standing inefficiencies of the construction sector, many governments have begun to promote modularization and digitally-enabled product platforms to deliver social and economic infrastructure. Drawing on an international case study of nine leading construction firms, I will share the findings on how firms strategize for the transition into modularization then towards platform approaches. I will also discuss the implications of emerging use of platforms to digital project delivery and project management 4.0, especially on how projects mobilize towards the innovative use of digital twins and advanced informatics.*

THE UNIVERSITY OF HONG KONG 香港大學
faculty of architecture 建築學院
Department of Real Estate and Construction
地產及建築學系

Fridays 4:30 – 6 pm
@ KB526, Knowles Building

4 NOV
How Do Political Connections Mitigate Policy Uncertainty? Evidence From Chinese Real Estate Firms
Dr. Xiaoling Chu
Post-Doctoral Fellow
Department of Real Estate and Construction, HKU

11 NOV
Digital Delivery and Product Platforms: International Cases in Industrialized Construction and Implications to Projects
Ir Dr Alexander Zhou
Honorary Research Fellow
Imperial College

REC Brown-Bag Seminar Series
NOVEMBER 2022

HKURBAN labs

SCAN TO REGISTER

Department of Urban Planning and Design

1. BA(US) and MUP students

- won the following awards at the [SHAPING THE FUTURE | Nansha Innovation Challenge](#), organised by the University China Study Society (UCSS) on 25 September 2022.

The Challenge aimed to enrich university students' understanding of the emerging industries and sustainable development in Nansha and the Greater Bay Area.



- (i) MUP Year 2 students Hui Siu Tung, Ng Wai Man and Ho Ka Pui, and CUHK student Tsang Yik Fung, from the team '匯南', have been awarded Champion of the Tertiary Institutions Division, for their project 'Sustaining Amphibious Delta, Transforming Lingnan Metropolis'.



- (ii) BA(US) Year 2 students Liang Shizheng, Huang Xinyi and Kuang Yi, from the team 'HKUrbanist', have been awarded the 2nd Runner Up of the Tertiary Institutions Division, for their project 'Super Smart Garden City: Co-creating Talent-oriented Sustainable Nansha'.



- (iii) Chow Sin Yau (MUP Year 2), Chu Fong Wai (BAUS Year 4), Lam Tsz Ting (MUP Year 1) and Wong Tsz Yan Emily (MUP Year 1), from the team 'Urbanians', have been awarded the Best Design Team of the Tertiary Institutions Division, for their project 'Nansha in Rejuvenation: Towards a Smart and Green Gateway for Nature, Growth, and Innovation'.



Media Coverage:

- 無線新聞：[本港團體舉辦南沙發展城規比賽 有獲獎隊伍冀打造環保之都](#)

- 橙新聞：[「南沙・願景 創新挑戰賽」頒獎典禮成功舉行 獲勝隊伍將獲企業實習機會](#)
- 港人港地：[【出謀獻策】大學國事學會辦南沙發展城規比賽 得獎隊伍：望將南沙打造成環保之都](#)
- 大公文匯：[團體辦南沙願景創新挑戰賽 推動港青了解南沙區](#)
- 點新聞：[團體辦南沙願景創新挑戰賽 推動港青了解南沙區](#)

2. MUP students

- won the international [Architecture MasterPrize 2022](#) in its [Urban Planning \(student\) category](#), for their project 'Stage of the Art'.

The team members are as follows:

- FU Lee Ta (Ledia),
- HUNG Ting Yan (Winnie)
- FOO Chun Kau (Gordon),
- HUI Siu Tung (Koji),
- KWOK Ming Tak (Jason),
- KWOK Yee Hang (Anson),
- LEE Hiu Pan (Benjamin)

The two team leaders, FU Lee Ta (Ledia) and HUNG Ting Yan (Winnie), are also BA(US) graduates from the class of 2021.



Stage of the Art – a destination for people to express, experience and exchange the diverse forms of art

3. Dr Mandy Lau

- has commenced a three-year collaborative research project with Dr Frances Law (PI) of the Department of Social Work and Social Administration, HKU:

Project Title: Evaluation study of quality of life among children and their families living in the Hong Kong sub-divided housing units

Funding Source: The Hong Kong Jockey Club Charities Trust

Funding amount: HKD 3.28 million

4. RTPI Awards for Research Excellence 2022

(i) Ms Ka Yan Lai (PhD student)

- was a finalist in the Early Career Researcher Award category for a collaborative work with Dean Chris Webster and Dr Chinmoy Sarkar, published in *Landscape and Urban Planning*:

Lai, K. Y., Sarkar*, C., Kumari, S., Ni, M. Y., Gallacher, J., & Webster, C. (2021). Calculating a national Anomie Density Ratio: Measuring the patterns of loneliness and social isolation across the UK's residential density gradient using results from the UK Biobank study. *Landscape and Urban Planning*, 215, 104194. <https://doi.org/10.1016/j.landurbplan.2021.104194>

(ii) Dr Si Qiao (PhD 2022)

- was a finalist in the Early Career Researcher Award category for a collaborative work with Professor Anthony Yeh, published in *Journal of Transport Geography*:

Qiao, S., & Yeh, A. (2021). Is ride-hailing a valuable means of transport in newly developed areas under TOD-oriented urbanization in China? Evidence from Chengdu City. *Journal of Transport Geography*, 96, 103183. <https://doi.org/10.1016/j.jtrangeo.2021.103183>

More information: <https://www.rtpi.org.uk/events-training-and-awards/awards/rtpi-awards-for-research-excellence/2022-finalists/>

5. Max Yang Tse Chyi (MUP 2000)

- has his project selected as a finalist in the Royal Town Planning Institute (RTPI) Awards for Planning Excellence 2022, in the International category.

The shortlisted 'South Pole' Peninsula (Urban Design and Regulatory Control Planning of Jiaowei Town, Zhanjiang, China) is designed by the Urban Design International Co. Ltd. (UDi), in which Yang is the Director of Planning. It is a comprehensive planning project commissioned by the Guangdong Zhanjiang Municipal Government. The 49 km² site is the southernmost point of Mainland China, and an idyllic coastal peninsula for which UDi have created a uniquely sustainable Eco-Tourism revitalisation and development project based on the culture and heritage of the local indigenous agricultural and fishing communities.

Analysing the natural context, identifying the existing assets, and working from the bottom-up with local knowledge considerations, a sustainable proposal was taken from inception through to implementation, balancing environmental protection, rural revitalisation, and eco-tourism development. This sustainable development approach will help preserve the natural context, protect the idyllic coastal landscape, and enhance the well-being of the local inhabitants.

The RTPI Awards for Planning Excellence are among the longest running and most high-profile awards in the industry. For 40 years they have rewarded teams, projects and individuals that transform economies, environments and their communities all over the UK and internationally.

UDi is a Hong Kong-based urban design and planning consultancy led by its founder Ian Foster (former Assistant Professor of the MUD Programme) and Max Yang. It is the only consultancy from Hong Kong among the 2022 finalists.

More information: <https://www.rtpi.org.uk/media/12845/rtpi-awards-for-planning-excellence-finalists-brochure-2022.pdf>





6. Dr Cui Guo

- has her project, titled 'Early-life Exposure to Air Pollution and Chronic Health Conditions in Later Life: A Longitudinal Cohort Study' (Ref No.: 19202201), transferred from the Chinese University of Hong Kong to the University of Hong Kong. The project is supported by the Health and Medical Research Fund with an awarded amount of HK\$769,270, from 1 July 2022 to 31 December 2023. It will assess the life-course exposure to air pollution and its effects on chronic diseases in general residents based on a large longitudinal cohort in Taiwan.

Abstract

OBJECTIVE

1. *To investigate effects of exposure to multiple air pollutants (i.e., PM_{2.5}, NO₂ and O₃) during early life (≤18 years old) on chronic health conditions in adulthood.*
2. *To investigate the plausible mechanism that links early-life exposure with chronic health conditions in later life.*

HYPOTHESIS TO BE TESTED

Exposure to air pollution in early life has an effect on chronic health conditions in later life.

DESIGN and SUBJECTS

Two existing longitudinal cohorts: 20,950 participants from Taiwan and 18,679 participants from Hong Kong.

INSTRUMENTS

Each participant completed a standardised questionnaire and underwent a series of medical examinations at each visit to clinic centres. Air pollution concentrations at each participant's address were estimated using spatiotemporal models.

MAIN OUTCOME MEASUREMENTS

The main health outcomes will include medical examinations and chronic diseases affecting the cardiovascular system (abnormal blood pressure and hypertension), metabolism (abnormal glucose, diabetes, abnormal body mass index and metabolic syndrome), respiratory system (lung dysfunction and chronic obstructive pulmonary disease), and immune system (systematic inflammation).

DATA ANALYSIS

A two-stage analytical protocol will be used. In the first stage, we will perform cohort-specific analyses of the two datasets in Taiwan and Hong Kong. In the second stage, we will combine the cohort-specific estimates derived from the first-stage analyses by conducting a random-effects meta-analysis. We will also conduct stratified and sensitivity analyses.

EXPECTED RESULTS

We expect that the results will demonstrate an adverse association between early-life exposure to the air pollutants and chronic health conditions in later life. The plausible mechanism will be identified.

Centre of Urban Studies and Urban Planning

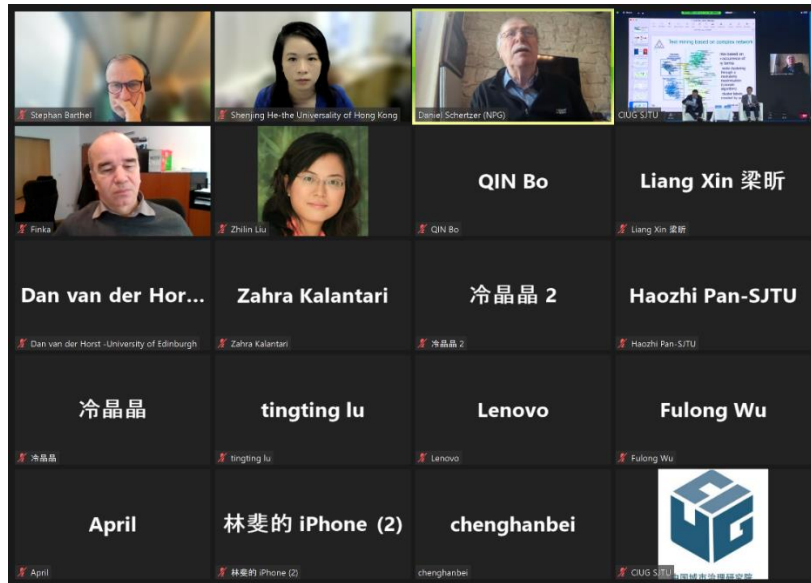
1. Professor Shenjing He

- was invited by the Countryside Conservation Office to share her insights on the modern 'Yeuk' concept on 6 October 2022.

More information: <https://bit.ly/3FqH1u1>



- was invited to speak at the 2022 Global Cities Forum – Sino-Europe Dialogue Sub-forum, on the theme of 'Towards Sustainable Development Goals: Make Cities and Human Settlements Inclusive, Safe, Resilient and Sustainable'. It was one of the thematic activities of the 'World Cities Day' event, jointly hosted by the United Nations Human Settlements Programme, Development Research Center of Shanghai Municipal People's Government, Shanghai Housing and Urban-Rural Construction Governance Commission, Shanghai Jiao Tong University, and the World Bank, at Shanghai Hyatt on the Bund and online, on 2 November 2022.



- was invited to deliver a keynote speech entitled ‘Equity and Governance Issues under China’s “Double Carbon” Goals’ at the 15th Anniversary Celebration Ceremony of The Peking University – Lincoln Institute Center for Urban Development and Land Policy (PLC), on 5 November 2022.

**北京大学-林肯研究院
城市发展与土地政策研究中心
成立十五周年系列活动二**

**双碳目标下
中国城镇化路径：
前沿思考**

时间：2022年11月5日 10:00-12:15
B站直播：
bilibili直播间号22608278
直播链接：<http://live.bilibili.com/22608278>

绿色建筑的演化与未来
仇保兴
国务院参事
国际水协（IWA）中国委员会主席
中国城市科学研究会理事长
国家气候变化专家委员会委员
国际欧亚科学院院士

考虑未来不确定性下的商业地产减碳模型
郑思齐
麻省理工学院（MIT）城市研究与规划系
房地产中心城市与房地产可持续发展研究特聘教授
MIT房地产中心教务主任

双碳目标下的城市公平性议题
何深静
香港大学城市规划及设计系教授、系主任
促进公平与福祉的社会基础设施实验室主任
英国社会科学院院士

从集聚中减碳
陆 铭
上海交通大学安泰经济管理学院特聘教授
教育部长江学者
中国发展研究院执行院长
中国城市治理研究院研究员
上海国际金融与经济研究院研究员

城乡融合与乡村振兴
刘守英
中国人民大学经济学院党委书记兼院长、教授

总结发言
刘 志
北大-林肯中心主任

会议议程

时间	内容	发言人
10:00-10:05	主持人致辞	刘 志
10:05-10:30	绿色建筑的演化与未来	仇保兴
10:30-10:55	考虑未来不确定性下的商业地产减碳模型	郑思齐
10:55-11:20	双碳目标下的城市公平性议题	何深静
11:20-11:45	从集聚中减碳	陆 铭
11:45-12:10	城乡融合与乡村振兴	刘守英
12:10-12:15	总结发言	刘 志

问卷星
如需向会议主办方反馈
请扫描二维码报名

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2. Dr Weifeng Li

- was invited to deliver a talk on 'Planning for Environmental Sustainability and Justice in Urban China', at [the 9th Urban China Forum: Sustainable Urban Planning in China](#), organised by the Urban China Network (UCN) – a student-led organisation at the Columbia University Graduate School of Architecture, Planning, and Preservation (GSAPP), on 14 October 2022.

第九届中国城市论坛
第 九 届 中 国 城 市 论 坛

9th Urban China Forum
中国城市的可持续规划
SUSTAINABLE URBAN PLANNING IN CHINA

COLUMBIA UNIVERSITY
IN THE CITY OF NEW YORK

DAY 1 Oct. 14, Fri, 2022
9 a.m. - 11 a.m.
(EDT/New York)

Oct. 15, Sat, 2022
9 a.m. - 12 p.m.
(EDT/New York) **DAY 2**

Forum Speakers

Oct. 14, Friday

Weifeng Li 李卫锋
Associate Professor, University of Hong Kong, Department of Urban Planning and Design

Li Tian 田莉
Professor, Tsinghua University, Department of Urban Planning

Oct. 15, Saturday

Yunjing Li 李蕴婧
Postdoctoral Fellow, University of Hong Kong, Department of Geography

Nick R. Smith
Assistant Professor, Barnard College, Architecture and Urban Studies

Jianqiang Yang 阳建强
Professor, Southeast University, Department of Architecture

Scan QR code for registration

OCT 14

OCT 15

Organized by
UCN URBAN CHINA NETWORK
COLUMBIA UNIVERSITY

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Weischoff East Asian Institute
COLUMBIA GSAPP

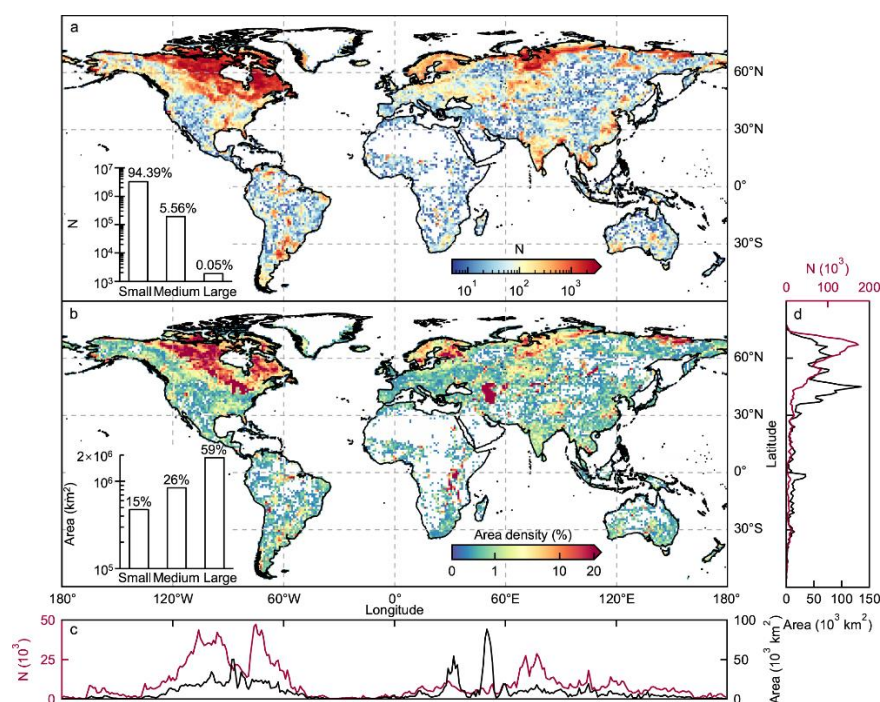
Special Thanks to
URBAN PLANNING PROGRAM COUNCIL
GSAPP

3. Dr Xuehui Pi (PhD 2022) and Dr Weifeng Li

- have published the following paper:

Pi, X., Luo, Q., Feng, L., Xu, Y., Tang, J., Liang, X., Ma, E., Cheng, R., Fensholt, R., Brandt, M., Cai, X., Gibson, L., Liu, J., Zheng, C., **Li, W.**, & Bryan, B. A. (2022). Mapping global lake dynamics reveals the emerging roles of small lakes. *Nature Communications*, 13(1), 5777. <https://doi.org/10.1038/s41467-022-33239-3>

Abstract: Lakes are important natural resources and carbon gas emitters and are undergoing rapid changes worldwide in response to climate change and human activities. A detailed global characterization of lakes and their long-term dynamics does not exist, which is however crucial for evaluating the associated impacts on water availability and carbon emissions. Here, we map 3.4 million lakes on a global scale, including their explicit maximum extents and probability-weighted area changes over the past four decades. From the beginning period (1984–1999) to the end (2010–2019), the lake area increased across all six continents analyzed, with a net change of +46,278 km², and 56% of the expansion was attributed to reservoirs. Interestingly, although small lakes (<1 km²) accounted for just 15% of the global lake area, they dominated the variability in total lake size in half of the global inland lake regions. The identified lake area increase over time led to higher lacustrine carbon emissions, mostly attributed to small lakes. Our findings illustrate the emerging roles of small lakes in regulating not only local inland water variability, but also the global trends of surface water extent and carbon emissions.



Lakes with maximum surface area >0.03 km² were mapped, showing **a** lake count (total number of lakes) and **b** lake area density (total lake area/grid area) per 1° × 1° grid cell. The longitudinal and latitudinal lake profiles summarising (by 1°) the lake count and lake area are shown on **c** and **d**.

4. Dr Yifu Ou (PhD 2022), Dr Ji Zheng (PDF) and Dr Kyung-Min Nam

- have published the following paper:

Ou, Y., Zheng, J., Nam, K. M. (2022). Impacts of urban rail transit on on-road carbon emissions: A structural equation modeling approach. *Atmosphere*, 13(11): 1783. <https://doi.org/10.3390/atmos13111783>

Abstract: *We examine the effects of urban rail transit on on-road carbon emissions in 90 Chinese cities, taking a structural equation modeling approach. Urban rail transit theoretically helps mitigate overall transport-sector emissions by absorbing part of the vehicular traffic demand or by generating traffic-diversion effects. However, its net contribution is obscure, given potential traffic-creation effects, since improved rail access can also incentivize new developments and thus induce additional on-road traffic. In contrast to many existing studies that neglect rail transit's traffic-creation effects, we analyze these opposing effects within a single framework, where primary rail-associated emission channels are explicitly modeled. Our central results show that urban rail density is negatively associated with on-road carbon emissions with a net elasticity of -0.0175 , speaking for the dominance of the traffic-diversion effects in China's context. However, mixed evidence exists on the effects of increased urban rail density on vehicle-kilometers traveled and vehicle ownership, with the two opposing effects being relatively balanced. These findings suggest that transport-sector mitigation needs coordination between urban rail development and planning regulations.*

5. Dr Zhan Zhao

- has published the following paper:

Zhao, Z.*, Koutsopoulos, H.N., & Zhao, J. (2022). Identifying hidden visits from sparse call detail record data. *Transactions in Urban Data, Science, and Technology*. <https://doi.org/10.1177/27541231221124164>

Abstract: *Despite many studies on trip inference using call detail record (CDR) data, a fundamental understanding of their limitations is lacking. In particular, because of the sparse nature of CDR data, users may travel to a location without being revealed in the data, which we refer to as a hidden visit. The existence of hidden visits hinders our ability to extract reliable information about human mobility and travel behavior from CDR data. In this study, we propose a data fusion approach to obtain labeled data for statistical inference of hidden visits. In the absence of complementary data, this can be accomplished by extracting labeled observations from more granular cellular data access records, and extracting features from voice call and text messaging records. The proposed approach is demonstrated using a real-world CDR dataset of 3 million users from a large Chinese city. Different machine learning*

models are used to infer whether a hidden visit exists during an observed displacement. The test results show significant improvement over the naive no-hidden-visit rule, which is an implicit assumption adopted by most existing studies. Based on the proposed model, we estimate that over 10% of the displacements extracted from CDR data involve hidden visits.

- has published the following paper with PhD students Ms Yuebing Liang and Mr Guan Huang:

Liang, Y., Huang, G., & Zhao, Z.* (2022). Bike sharing demand prediction based on knowledge sharing across modes: A graph-based deep learning approach. *IEEE 25th International Conference on Intelligent Transportation Systems (ITSC)*. <https://doi.org/10.48550/arXiv.2203.10961>

Abstract: *Bike sharing is an increasingly popular part of urban transportation systems. Accurate demand prediction is the key to support timely re-balancing and ensure service efficiency. Most existing models of bike-sharing demand prediction are solely based on its own historical demand variation, essentially regarding bike sharing as a closed system and neglecting the interaction between different transport modes. This is particularly important because bike sharing is often used to complement travel through other modes (e.g., public transit). Despite some recent efforts, there is no existing method capable of leveraging spatiotemporal information from multiple modes with heterogeneous spatial units. To address this research gap, this study proposes a graph-based deep learning approach for bike sharing demand prediction (B-MRGNN) with multimodal historical data as input. The spatial dependencies across modes are encoded with multiple intra- and inter-modal graphs. A multi-relational graph neural network (MRGNN) is introduced to capture correlations between spatial units across modes, such as bike sharing stations, subway stations, or ride-hailing zones. Extensive experiments are conducted using real-world bike sharing, subway and ride-hailing data from New York City, and the results demonstrate the superior performance of our proposed approach compared to existing methods.*

6. Dr Zhan Zhao and Dr Xiaohu Zhang

- have published the following paper with PhD student Ms Yuebing Liang:

Liang, Y., Zhao, Z.*, and Zhang, X. (2022). Modeling taxi cruising time based on multi-source data: A case study in Shanghai. *Transportation*. <https://doi.org/10.1007/s11116-022-10348-y>

Abstract: *Vacant cruising is an inevitable part of taxi services caused by spontaneous demand, and the efficiency of cruising strategies has purported impact on the profit of individual drivers. Extensive studies*

have been conducted to analyze taxi cruising patterns and propose effective cruising strategies. However, existing studies mainly focused on the collective behavior of certain driver groups and failed to capture cruising behavior patterns at the individual driver or trip level. Also, prior studies considered different types of factors affecting taxi cruising, but we still lack an integrated model to compare their relative importance. In this study, we analyze trip-level cruising time and the associated external and internal factors using a taxi trajectory dataset in Shanghai, China. A trajectory annotation technique is introduced to segment taxi trajectories into different phases. Various external (supply and demand, traffic condition and built environment) and internal (cruising strategies and historical driver performance) factors are derived from taxi trajectories and other data sources. A spatiotemporal embedding method is devised to capture unobserved effects over time and space. The impacts of external and internal factors on taxi cruising time are examined using regression and XGBoost—a machine learning model. The results show external and internal factors are both important in determining taxi cruising time. Cruising strategies contribute 49.0% in taxi cruising time, which implies effective cruising strategies can greatly reduce vacant cruising time. Additionally, nonlinear associations of some variables (e.g., supply–demand patterns, traffic speed) with taxi cruising time are discussed.

Healthy High Density Cities Lab

1. Dr Chinmoy Sarkar

- was a resident for nine days in Washington as part of his [National Academy of Medicine \(NAM\) – HKU Fellowship in Global Health Leadership](#), where he also attended NAM's 50th anniversary celebrations.



2. Ms Ka Yan Lai (PhD student)

- has been invited by the Salzburg Global Seminar to attend the in-person programme to share her experiences in the '[Global Lessons on Greening School Grounds and Outdoor Learning](#)', in Salzburg, Austria, from 14 to 18 November 2022.
- has her abstract co-authored with Dean Webster, Professor John Gallacher, Sarika Kumari and Dr Chinmoy Sarkar accepted for the [2022 Public Health Science Conference](#), to be held in Glasgow, UK, on 25 November 2022. The abstract is accepted as a poster presentation in the category of '[Non-communicable diseases](#)', and as a publication in *The Lancet*:

Lai, K.Y.* , Webster, C., Kumari, S., Gallacher, J. E. J., & Sarkar, C. (2022). Association between individual-level socioeconomic position and incident dementia using UK Biobank data: a prospective study. *The Lancet*.

Ronald Coase Centre for Property Rights Research

1. Professor Lawrence Lai and Professor K.W. Chau

- have published the following paper:

Lai, L.W.C., & Chau, K.W. (2022). Land surveying and squatting. *Land*, 11(10), 1740. <https://doi.org/10.3390/land11101740>

Abstract: *Although its scale and social implications depend on the specific country or local situations, squatting is a global urban and rural phenomenon associated with such humanitarian issues as social justice, poverty and environmental impact, as well as economic issues, such as rent seeking by certain groups. It can be sporadic or massive. The state appears to deal with the former by implementing legal rules and the latter with social policies. With regard to the economic gains and costs of allowing squatting, it can be argued that squatter policies, which confer some entitlements on squatters, are akin to the doctrine of adverse possession in equity through recognising the benefits of long-term possession of land. Surveying and mapping as a key tool in the regulation of squatters in this context may or may not be carried out, contrary to common belief. This paper demonstrates, with documented real-world examples from Australia and China, that the state surveying of massive urban or rural squatting on government land is contingent on the benefits and costs of tolerating squatting. The discussion is related to the transfer of development rights (TDR) as a practicable inclusive policy in the context of a global drive towards land assembly for real estate development, which squatters often obstruct.*

2. Dr Chongyu Michael Wang

- has the following paper accepted for publication:

Wang, C., & Zhou, T. (2022). Face-to-face interactions, tenant resilience, and commercial real estate performance. *Real Estate Economics*, 00, 00-00. <https://doi.org/10.1111/1540-6229.12412>

Abstract: *We study the impact of face-to-face (FTF) interactions on commercial real estate (CRE) performance. By linking tenants, properties, and CRE firms, we construct three novel FTF measures that capture tenant remote working, internal communication between coworkers, and external contact with customers. Using the COVID-19 pandemic as an exogenous shock to the FTF economy, we find that firms holding properties with tenants that are more resilient to social distancing perform better. These FTF effects weaken over the long term, however. As investors are capable of compiling valuable information at granular levels regarding how tenants operate, our findings support market efficiency and shed light on post-pandemic CRE performance.*

JEL Classifications: G01, G11, G12, G14, R30

Keywords: Commercial Real Estate, Face-to-Face Interactions, Tenant Resilience, Social Distancing, COVID-19 Pandemic

- The above paper has received the Best Real Estate Investment Trusts (REIT) Manuscript Prize from the American Real Estate Society (ARES) at its Annual Meeting in October 2022. The Prize is sponsored by the National Association of Real Estate Investment Trusts (NAREIT).

Social Infrastructure for Equity and Wellbeing Lab

1. Professor Shenjing He

- has published the following paper:

He, S., & Zhang, Y. (2022). Reconceptualising the rural through planetary thinking: A field experiment of sustainable approaches to rural revitalisation in China. *Journal of Rural Studies*, 96, 42-52. <https://doi.org/10.1016/j.jrurstud.2022.10.008>

Abstract: *Drawing on a critical reflection on the long-lasting debates of rural-urban dichotomy, we argue for a reconceptualisation of the rural that emphasises the ever-evolving and multifaceted nature of rurality to explore alternative pathways of rural revitalisation through non-urban-centric planetary thinking. Instead of viewing the rural and the urban as two contrasting and competing categories, we advocate for planetary thinking that looks beyond spatial boundaries and volumetric changes to focus on the co-evolving multiple trajectories of human-nature interaction, with a particular emphasis on rural transformation. Our propositions are three-fold. First, as an integral and indispensable component of the planetary system, the sustainable and equitable development of the rural is of planetary significance. The harmonious human-nature relations embodied in rural practices hold the key to tackling anthropogenic challenges. Second, rurality is constantly rejuvenated and enriched by new economic and sociocultural practices and technological innovations along with its urban counterpart, during which ruralisation and urbanisation are intersecting and co-evolving at the planetary scale. Third, rural communities are important nodes of the planetary networks of resources, people, information, and knowledge connected through multi-directional flows in which the agency of rural communities is increasingly being recognised and strengthened. We then present a field experiment of green development in Shishou, central China to exemplify how this reconceptualisation helps to foster virtuous urban-rural interactions in response to national and global changes to unleash the potentials of the countryside through sustainable revitalisation approaches. While the green development experiment in Shishou is far from ideal, the project demonstrates major breakthroughs concerning rural-urban relations and the multifaceted rurality. These new approaches to rural revitalisation hold the hope for nurturing endogenous growth through empowering local communities and catering to indigenous needs while addressing planetary challenges, which can eventually be scaled up to wider regions and further afield.*