

Dean's Roundup: September 2020 (Part 1 of 2)

Roundup: *Ceiling function*, the mathematical operation of rounding a number up to the next higher integer.

Roundup: a term in American English referring to the process of gathering animals into an area, known as a "Muster" in Australia.

Rounding up: when a helmsman cannot control a boat and it heads into the wind

Roundup: the plan for an invasion of northern France by Allied forces during World War II (Wikipedia)

Dean's Roundup: part blog, part bulletin; part honour roll, part curatorial [cu'ra-to'ri-al (ky'ōrə-tōr'ē-əl, -tōr'-) n. nounised by the Dean from curator + editorial]

Dear all,

We're into week 2 of AFIC1001, FoA's new interdisciplinary foundation course and I want to say thank you to Matthew and Nik, the course designers and managers and to all of you who have agreed to speak on it and to our hardworking TAs. It is one of the most important innovations I have been involved in during my deanship in FoA. If we get this right, I think we will have made a breakthrough in our own foundation teaching and also a breakthrough for built environment schools regionally and globally. I think we are getting it right. Please take a look at the videos if you have time.

In my kick-off lecture last week, I shared 5 of my favourite urban theories. Why favourite? For one reason only: explanatory power (looking back) or predictive power (looking forward). Ok, two reasons, but they amount to the same thing. If you want to understand cities – their origin, persistence, growth and evolution, then these 5 theories, in my 35 years' experience as an urban scholar, really help. Why would I not want to pass them on to first year students? What are your 5 top-ranked theories, ranked for usefulness?

Teaching undergraduate students once again left me reflecting on our use of theory in teaching. I have shared thoughts on this before in DRup, but it's a persistent concern of mine, so forgive the repetition. In a tutorial video I made last weekend to follow-up the mass of student questions, I introduced them to Kondratiev technology long waves and to Kuznet infrastructure short waves, both of which help explain a city's texture and morphology. These were not on my list of five theories but I mentioned to students that Russian economist Nikolai Kondratiev was executed for his theory. Around 300 years earlier, Italian polymath Galileo was imprisoned for life for developing the Polish astronomer Copernicus' theory of the solar system. Kondratiev formulated a narrative of economic history that didn't align with Stalinist Marxism. Galileo's theory, it seems, offended the religious non-experimental scientists of 17th century Rome.

If you study the history and intertwining of philosophy, religious belief, science, technology and social progress, it turns out that theory matters. It matters a great deal and it matters that academics and their students learn to distinguish between good and bad theory. In the past, purveyors of good theory have given up their freedom and even their lives for their ideas. You have to be pretty certain of a theory's merit to do that.

I had another good conversation this week – with another group of students. Among other things, we discussed the Austrian-British Philosopher Karl Popper's book 'The

Open Society and its Enemies (London: Routledge 1945). In it, Popper took philosophical and moral issue with Marx, Hegel and Plato, because their analyses of the problem of the human condition tend to lead to totalitarianism. Elsewhere, Popper took issue with fellow Austrian Sigmund Freud for his psychotherapy theory, which Popper argued to be pseudo-science because it was impossible to devise a test that could falsify its basic propositions. In another of Popper's books, The Logic of Scientific Discovery (the copy on my book shelf I bought when I was an undergraduate), he sets out his version of the scientific method in a way that does not distinguish between scientific truth and phenomenological truth in wider social and economic narratives. Social theory should be treated the same as scientific theory in terms of what we expect from it. For Popper, testing, trial and error in the practices, politics and policies that govern societies, is as important as testing, trial and error in science. Rigorous open science leads to more reliable knowledge, more enlightened society, faster technological discovery, more efficacious and safer Covid-cures, and faster human advancement. Rigorous open society, where science, ideas, politics, policies and culture are shared and debated openly, and where leaders receive suitable feedback and are accountable for their policy 'experiments', leads to better civilization.

So, it matters what theories, narratives and thinking tools we offer to our students. Bad theories, like bad laws tend to have a very short half-life. No harm in trying them out, so long as we and our students adopt the habit of testing them to destruction. Testing is best done by open debate and resort to empirical and historical analysis rather than by conformity with pre-held ideas, beliefs of ideology. The latter approach leads to Copernicus's and Kondratiev's fate.

Better theories – those that offer really useful insights and explanatory and predictive power, tend to last. No-one questions Copernicus' heliocentric theory of the solar system anymore. It has moved from 'theory' to fact, for all intents and purposes. What are the Copernicus-like theories of our subjects, if there are any? Which theories are very powerful but still need testing? Kondratiev waves are a case in point. The jury is still out about whether K-waves describe a 'true' phenomenon or a spurious one caused by data noise or regularities other than the ones the theoretician hypothesized.

A provocative note: students often find it easier to engage with theoretical ideas that are expressed in simple, reduced-form propositions. It is very difficult to engage with a holistic theoretical narrative. Where do you start? Holistic theories, like Freud's psychoanalysis or Marxian analysis of the cycles of capitalism are not only non-refutable, but as a result, are also difficult to discuss. Science has been said to be a noble cause. Look what it has delivered. The first pandemic of the 21st century has reminded a society tempted to drift away from science, of the noble cause that as a civilization, we have been embracing for the past 500 years.

One of the liveliest points of discussion among our 180 freshmen after last week's lectures was 'will cities ever be the same again post Covid-19?' **Has the tyranny of distance finally been conquered by Zoom?** I've published two invited journal papers in Covid-19 special issues and in both, I predicted business as usual for cities. My prediction was based on theory. I may be proven wrong. Knowledge will have advanced. Even if zoom has the effect of rendering commuting costs zero and labour, as a factor of production, a frictionless factor, will agglomeration economies of production also disappear as the centralizing force they have been since the first human settlements of the late Neolithic? Or do agglomeration economies, at least for some industries, somehow remain centralized even when labour is dispersed? And even if there is a great dispersal in human production relationships, will agglomeration economies of consumption (shared cultural experiences) keep the city's centripetal

force as strong as ever, perhaps even strengthen it as information and transport technologies continue to reduce the friction of distance?

<>

Please join me in congratulating Dr. Bin Jiang of DLA, Dr. Kyungmin Nam and Dr. Chinmoy Sarkar of DUPAD on their promotion to Associate Professors with tenure, and Associate Professor Dr. Jiangping Zhou, also from DUPAD, on the success of his tenure application.

Thank you for your continuing contributions to the Faculty, the University and the community. Dean's Roundup will revert to being more regular and have a new format, as part of FoA's new PR and Comms agenda. More of that next time.

Chris

Teaching and other Achievements

Department of Real Estate and Construction

1. Professor Steve Rowlinson

- The Council has approved at its meeting of 28 July 2020 a recommendation of the Senate that, under the provisions of Statue XIII.1, the title of Emeritus Professor be conferred to Professor Steve Rowlinson.

Department of Urban Planning and Design

1. Professor Rebecca Chiu

- Professor Chiu has been appointed by the government as non-official member to the Assessment Committee of the Funding Scheme to Support Transitional Housing Projects by Non-government Organisations, for a term of three years till June 2023.

The Assessment Committee will vet applications and oversee the implementation of the Funding Scheme, which is one of the proactive approaches in facilitating non-government organisations to take forward transitional housing projects and to increase transitional housing supply by 15,000 units in three years' time.

2. Professor Shenjing He

- Professor He was listed by Elsevier in April 2020, as one of the most cited researchers in mainland China (social sciences) for six consecutive years from 2015 to 2020. The data source Elsevier used was from Scopus that includes publications in English and citations worldwide.
- Professor He participates as a Co-PI in a major research project entitled "Equalization of and Accessibility to Basic Public Services in Developed Regions in China: Theorization and Practices", which has received a funding awarded by the National Social Science Foundation of China at the amount of RMB 800,000, for the project period starts from April 2020 to April 2022. The PI of this project is Professor Jiawen Yang of Peking University.
- Professor He participates as a Co-I in a research project entitled "Effects of Environment-related Experiences on Older Person's Well-being in Hong Kong's "Double Ageing" Context: A Person-environment Perspective". This project has received a funding awarded by the HKSAR Government Public Policy Research Funding scheme (2019-20 Fourth Round), at the amount of HK\$497,030, for the project period from March 2020 to February 2021. The PI of this project is Dr. Yi Sun of the Hong Kong Polytechnic University.

3. Dean Webster

- has been appointed by the World Green Building Council as a member to the Jury Committee for the 2020 Asia Pacific Leadership in Green Building Awards.

<https://www.worldgbc.org/news-media/worldgbc-announces-jury-2020-asia-pacific-leadership-green-building-awards>

The Green Building Awards was first held in 2014 and thereafter, on a biennial basis. It showcases and celebrates the achievements of businesses and innovators leading on sustainability in buildings across the Asia Pacific region.

Division of Architectural Conservation Programmes

1. Dr. Ho Yin Lee

- Dr. Lee, together with Professor Lynne DiStefano and Mr. Chi Pong Lai, published a book chapter entitled “Hong Kong’s Early Composite Building,” in *Place Meaning and Attachment: Authenticity, Heritage and Preservation*, edited by Dak Kopec and AnnaMarie Bliss (New York and London: Routledge, March 2020), 171-181. [228 pages; ISBN 9780367232658]

See: <https://www.routledge.com/Place-Meaning-and-Attachment-Authenticity-Heritage-and-Preservation/Kopec-Bliss/p/book/9780367232658>.



Hong Kong's Monster Building, as seen from the main street, King's Road. (Source: Ho Yin Lee)



On the left is the podium-and-tower form of development that has replaced the 1960s Composite Building, which can be seen on the right. (Source: Ho Yin Lee)

- Dr. Lee, will host and supervise a Fulbright Scholar, James Carrico (currently pursuing a dual degree in Architecture and Urban Planning at Harvard University Graduate School of Design), for his Hong Kong-based research entitled “Hyperdense Architectural Heterotopias as a Model for a Sustainable Urban Future”, originally scheduled to commence in September 2019, and suspended by the Fulbright Office until the end of 2020 due to the COVID-19 pandemic.

Research Achievement

Faculty of Architecture

1. Report from Professor Shenjing He, Associate Dean (Research Postgraduate Studies)

(i) RPG Type A places:

The faculty has been offered a total of 8 places to admit Type A RPG students, of which 1 goes to DoA, 2 goes to REC and 5 goes to DUPAD, including the 3 early bird nominations.

Below is a summary of the Faculty’s achievement for this year’s exercise:

HKPFS + HKU-PS (2 awardees) *

5623021 ZHOU Mingzhi (DUPAD)
(Primary supervisor: Dr. Jiangping Zhou)

5623845 SEREYPAGNA Pen (DoA)
(Primary supervisor: Professor Eunice Seng)

HKU Presidential PhD Scholarship (HKU-PS) (1 awardee) *

5623573 GHANSAH Frank Ato
(Primary supervisor: Professor Wilson Lu)

University Postgraduate Fellowships (UPF) (5 awardees)

5624739 LU Tongyuan
(Primary supervisor: Professor KW Chau)

5624065 YIMPARSIT Kasemsit
(Primary supervisor: Professor Rebecca Chiu)

5624411 LUO Zixin
(Primary supervisor: Professor Anthony Yeh)

5624152 LI Chenxi
(Primary supervisor: Professor Shenjing He)

5624019 WANG Dawei

(Primary supervisor: Dr. Weifeng Li)

* these awardees also have an opportunity to compete for the University's Swire Scholarship.

This is quite an achievement, as most of our nominees have been offered type A places this year! A big thank you to Carol and the research team for their great efforts and all the supervisors who attracted these excellent students!

(ii) 2018-19 Li Ka Shing Prizes & Awards for Outstanding Research Postgraduate Student:

Dr. Chen Zifeng (PhD graduate of DUPAD, supervised by Professor Anthony Yeh), is awarded the prestigious Li Ka Shing Prize.

2. Report from Professor Wilson Lu, Associate Dean (Research)

- Funding results of Research Grants Council (RGC) General Research Fund (GRF) 2020/21:

| Dept. | PI | Title | Amount Awarded (HK\$) |
|-------|----------------------------|---|-----------------------|
| REC | Dr. Y.S.I. Chan | Enhancing Underground Development Users' Health through an Automated Risk Assessment System for Facilities Management | 684,520 |
| REC | Professor K.W. Chau | Green Building Premium - the Case of Residential Market | 563,200 |
| REC | Dr. Lennon H.T. Choy | Delay in policy responses to housing market dynamics: Structural biases of age effect in hedonic price based residential property price indices | 497,800 |
| REC | Professor Kelvin S.K. Wong | Urban Network Capital: How do Chinese Cities Grow in a Networked Economy? | 631,840 |
| DUPAD | Dr. Chinmoy Sarkar | Impact of exposure to green environments on depression in the most densely populated city in the world | 965,120 |

| | | | |
|-------|----------------------------|---|-----------|
| DUPAD | Dr. Jiangping Zhou | Discovering mass transit's capacity and resilience in social movements with an unprecedented testbed: A mixed-methods study of Hong Kong's MTR in anti-extradition protests | 582,663 |
| DUPAD | Professor Anthony G.O. Yeh | Delineating Functional Cities in Chinese Mega City Regions Using Cellular Network Data: A Case Study of the Pearl River Delta | 1,057,524 |
| DUPAD | Professor Shenjing He | The Rise of Education-featured Gated Communities in Chinese Cities: Formation Mechanism and Implications on Housing Differentiation, The Case of Guangzhou | 913,701 |

- Funding results of Research Grants Council (RGC) Early Career Scheme (ECS) 2020/21:

| Dept. | PI | Title | Amount Awarded (HK\$) |
|-------|-----------------|--|-----------------------|
| REC | Dr. Xue, Fan | From point cloud to building and city information model (BIM/CIM): A study of architectonic grammar optimization | 635,569 |
| DoA | Dr. Xiaoxuan Lu | Between, below, behind: An ontology of small urban spaces in Hong Kong | 709,340 |

3. Dr. Llewellyn Tang

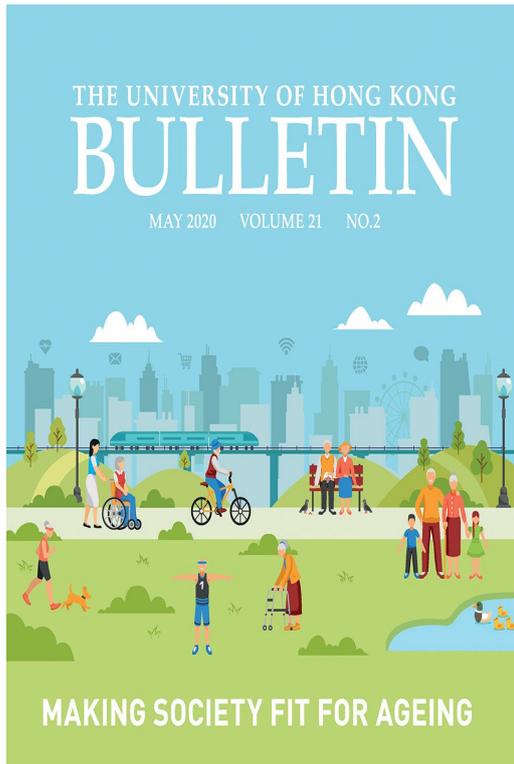
- Dr. Tang's research project entitled "Development of Novel Integrated BIM and A.I. Platform for Big Asset Data Management in Hospitals under Coronavirus Crisis" has been approved by the University Research Committee (URC) to receive a Platform Technology Funding (PTF) of 2019/20, at the amount of HK\$963,863, for a project period of 24 months starting from 30 June 2020 to 29 June 2022.

CUSUP

1. HKU Bulletin Cover Story

- CUSUP researchers' ongoing studies on how to improve the built environment for the elderly in both new and existing neighbourhoods have been featured in a cover story entitled "No Place Like Home" in the May issue of HKU Bulletin (May 2020, vol. 21, no. 2), whose theme is "Making Society Fit for Ageing". URL: <https://bulletin.hku.hk/cover-story-theme/no-place-like-home/>

Featured CUSUP researchers includes Professor Rebecca Chiu, Dr. Guibo Sun, Dr. Ying Chang, Dr. Derrick Ho and Dean Webster



2. Dr. Roger Chan

- Dr. Roger Chan has published a journal paper:

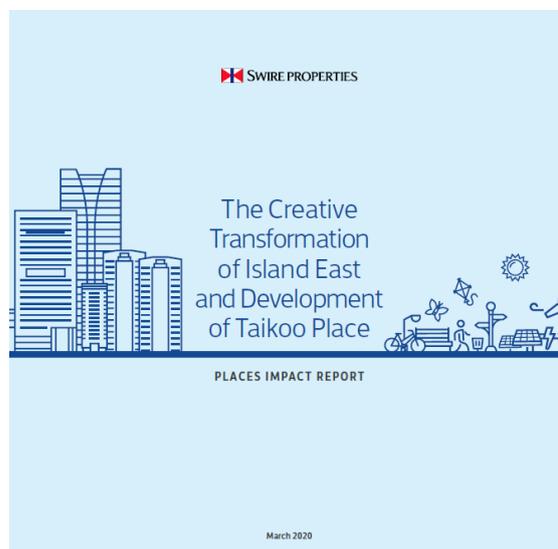
Mai, X., Chan, R.C.K. Detecting the intellectual pathway of resilience thinking in urban and regional studies: A critical reflection on resilience literature. *Growth and Change*; 00: 1 – 14, 2020. DOI: <https://doi.org/10.1111/grow.12390>

Abstract: *Confronted with increasing natural and anthropogenic crises, sustainable urban and regional development requires a sound understanding of how cities and regions respond to those crises and how that response shapes their continued development. The conceptual ambiguity and missing link among varied perspectives of resilience studies have given rise to a sneaking suspicion about the contribution of resilience thinking. By conducting a network analysis of 1,274 papers published between 1991 and 2019 using CiteSpace, we detect and visualize the intellectual pathway of resilience thinking and argue for its malleability to deepen our understanding about human-environment dynamics. Three major research clusters were identified: adaptive capacity of ecosystems, regional variation in economic resilience, and social resilience of disadvantaged communities. Resistance and recovery of systems are the key concerns in the first two clusters, whereas social resilience emphasizes opportunities and processes of restructuring rather than returning to the pre-crisis status. The extension of resilience thinking to the social realm is a promising area for future research. It calls for a shift of epistemology from the deterministic structure-function hypothesis which is place-less toward a situated understanding of context, relation, and human adaptation despite the methodological challenges ahead.*

3. Alain Chiaradia

- Alain has co-authored with the Swire Properties and Waters Economics Ltd. a Places Impact Report, entitled “The Creative Transformation of Island East and Development of Taikoo Place”, which has been released by the Swire Properties Sustainable Development 2030 ‘Places’ Pillar Working Group in March 2020:

URL: <https://www.swireproperties.com/-/media/files/swireproperties/publications/2020-places-impact-report.ashx>.



Alain has been invited by the Swire Properties to contribute to a short video (https://blob.swireproperties.com/taikooplace/Places%20Impact%20Report%20video_500.mp4) to disseminate the Places Impact Report



This Report has also been featured in the following media:

(i) Capital Weekly – Sustainability Expert, April 2020



(ii) HK Economic Times online, 24 April 2020

太古地產發佈首份港島東「社區營造效益報告」提升社區活力素質

<https://ps.hket.com/article/2627321/%E5%A4%AA%E5%8F%A4%E5%9C%B0%E7%94%A2%E7%99%BC%E4%BD%88%E9%A6%96%E4%BB%BD%E6%B8%AF%E5%B3%B6%E6%9D%B1%E3%80%8C%E7%A4%BE%E5%8D%80%E7%87%9F%E9%80%A0%E6%95%88%E7%9B%8A%E5%A0%B1%E5%91%8A%E3%80%8D%20%E6%8F%90%E5%8D%87%E7%A4%BE%E5%8D%80%E6%B4%BB%E5%8A%9B%E7%B4%A0%E8%B3%AA?mtc=20023>

(iii) Hong Kong Economic Journal Instant News, 24 April 2020

太古地產發布港島東社區營造效益報告

<https://www2.hkej.com/instantnews/stock/article/2445629/%E5%A4%AA%E5%8F%A4%E5%9C%B0%E7%94%A2%E7%99%BC%E5%B8%83%E6%B8%AF%E5%B3%B6%E6%9D%B1%E7%A4%BE%E5%8D%80%E7%87%9F%E9%80%A0%E6%95%88%E7%9B%8A%E5%A0%B1%E5%91%8A>

(iv) Now TV, 24 April 2020

太古地產發布港島東社區營造效益報告

<https://finance.now.com/news/post.php?id=580235>

(v) Finet, 24 April 2020

太古地產發布港島東社區營造效益報告

https://www.finet.hk/newscenter/news_content/5ea2e564bde0b33df47402c8

- Alain has published a journal paper:

Cooper, C. H.V., Chiaradia, A.J.F. sDNA: 3-d spatial network analysis for GIS, CAD, Command Line & Python, *SoftwareX*, vol. 12, 100525, 2020, ISSN 2352-7110, DOI: <https://doi.org/10.1016/j.softx.2020.100525>

Abstract: *Spatial Design Network Analysis (sDNA) is a toolbox for 3-d spatial network analysis, especially street/path/urban network analysis, motivated by a need to use network links as the principal unit of analysis in order to analyse existing network data. sDNA is usable from QGIS & ArcGIS geographic information systems, AutoCAD, the command line, and via its own Python API. It computes measures of accessibility (reach, mean distance/closeness centrality, gravity), flows (bidirectional betweenness centrality) and efficiency (circuitry) as well as convex hull properties, localized within lower- and upper-bounded radial bands. Weighting is flexible and can make use of geometric properties, data attached to links, zones, matrices or combinations of the above. Motivated by a desire to base network analysis on route choice and spatial cognition, the definition of distance can be network-Euclidean, angular, a mixture of both, custom, or specific to cyclists (avoiding slope and motorized traffic). In addition to statistics on network links, the following outputs can be computed: geodesics, network buffers, accessibility maps, convex hulls, flow bundles and skim matrices. Further tools assist with network preparation and calibration of network models to observed data. To date, sDNA has been used mainly for urban network analysis both by academics and city planners/engineers, for tasks including prediction of pedestrian, cyclist, vehicle and metro flows and mode choice; also quantification of the built environment for epidemiology and urban planning & design.*

Keywords: network analysis, spatial network analysis, GIS

4. Professor Shenjing He

- Professor He has published the following journal papers:

- (i) Yan, X.; He, S.; Dong, D. Determining How Far an Adult Rare Disease Patient Needs to Travel for a Definitive Diagnosis: A Cross-Sectional Examination of the 2018 National Rare Disease Survey in China. *International Journal of Environmental Research and Public Health*, vol. 17, issue 5, 1757, 2020. DOI: <https://doi.org/10.3390/ijerph17051757>

Background: *To investigate the multidimensional difficulties in accessing a definitive diagnosis of adult rare diseases and the associated impact factors in China.*

Methods: *A total of 1010 adult rare disease patients from the 2018 China Rare Disease Survey were used for analysis. The Structural Equation Models examined the interrelationships among five accessibility indicators and the effects of three sets of impact factors.*

Results: *(1) Accessibility: 72.97% of patients were misdiagnosed; they waited an average of 4.30 years and visited 2.97 hospitals before the definitive diagnosis; 67.13% were diagnosed outside the home city and traveled an average of 562 km. (2) Interrelationships among accessibility indicators: the experience of misdiagnosis significantly increased diagnosis delay and the number of hospitals visited, but had no significant effect on healthcare utilization across cities. (3) Impact factors: the rarity of disease only increased the number of hospitals visited and residence–hospital distance; high-quality healthcare distribution was key in determining accessibility; the older, disabled, poor, and less-educated individuals, and those in Central/West China were disadvantaged.*

Conclusion: *The socioeconomic dimension of difficulties in accessing a definitive diagnosis of rare diseases should be attended, especially the uneven distribution of high-quality healthcare and those disadvantaged patients. More systematic rare disease surveys are needed in the future.*

- (ii) Song, G.W., Liu, L., He, S.J., Cai, L., Xu, C. Safety perceptions among African migrants in Guangzhou and Foshan, China, *Cities*, vol. 99, 102624, 2020, ISSN 0264-2751. DOI: <https://doi.org/10.1016/j.cities.2020.102624>

Abstract: *Safety perceptions have received considerable attention in criminology and geography, yet few studies have looked into international migrants to developing countries. This study proposes a conceptual framework to account for migrant-specific characteristics and examines this framework with a sample of African migrants in Guangzhou and Foshan, China. Results from multilevel ordered logistic regression show that predictors of their perceptions of property safety and personal safety are different. Consistent with literature, their satisfaction with income in China, family support, and prior victimization experience strongly predict migrants' sense of security. Besides, we further find that perceived discrimination, indicative of migrants' acculturation process, decrease their sense of safety, and passport-check experience, indicative of migrants' relationship with local police, significantly lowers their personal safety perception. Migrants from countries with worse security conditions perceive a higher personal safety in China. Social trust, especially migrants' trust in*

Chinese businessmen and religious fellows are also associated with their security perception. The effect of geography is also examined but no substantial variation in safety perceptions is observed among four Diasporas. Findings of this study provide insight that may help reevaluate policies affecting daily life of African migrants and their perception of safety.

- (iii) Wei, Z.C., Liu, Y.T., He, S.J., Mo, H.T. Housing differentiation in transitional urban China, *Cities*, vol. 96, 102469, 2020, ISSN 0264-2751. DOI: <https://doi.org/10.1016/j.cities.2019.102469>

Abstract: *Due to privatisation, economic restructuring, and liberalisation, housing differentiation commonly occurs in transitional cities worldwide. Cities in marketised socialist China are emblematic of this trend. The implementation of housing marketisation reforms in China intensified nationwide housing differentiation. The extant literature on China's housing differentiation has mainly focused on different socio-economic groups within a particular city, while nationwide housing differentiation has not received much scholarly attention. Based on the 2015 China Household Finance Survey, this study explores nationwide housing differentiation patterns and identifies individual- and city-level factors driving such patterns in post-reform urban China. Considerable variations in terms of housing area and homeownership status were found across groups with different socio-economic and hukou conditions. Moreover, this study reveals that with the deepening of reforms, institutional factors inherited from the socialist planned economy era and burgeoning market mechanisms intertwined to intensify housing differentiation in transitional urban China. Housing differentiation in terms of housing area and homeownership status was significantly influenced by both individual- and city-level variables. The findings of this study can contribute to the further understanding of the patterns and mechanisms of housing differentiation in countries with transitional institutional environments.*

- (iv) Hu, L.R., He, S.J., Luo, Y., Su, S.L., Xin, J., Weng, M. A social-media-based approach to assessing the effectiveness of equitable housing policy in mitigating education accessibility induced social inequalities in Shanghai, China, *Land Use Policy*, vol. 94, 104513, 2020, ISSN 0264-8377. DOI: <https://doi.org/10.1016/j.landusepol.2020.104513>

Abstract: *Social inequalities induced by education accessibility are widespread and concern land use policy makers globally. Yet much of existing research heavily emphasizes on uncovering the spatial patterns of housing price in relation to education resources. This paper aims to renew our understanding of this classical topic by bringing the importance of temporal and institutional dynamics to the fore. Specifically, this research presents a detailed examination of the relationship between school quality and housing rental dynamics under the intervention of equitable housing policy, with special reference to Shanghai, the most developed megacity in China, also one of the first Chinese cities granting equal rights for renters to access schools within the catchment area. Based on time-series housing rental data collected from social media, the t-test discovers that school quality has a significant impact on housing rental prices after the introduction of this new housing policy. Moreover, housing rental prices within high-quality school districts are significantly higher than those within ordinary school districts. The hedonic model and variance partitioning further confirm that school quality is capitalized into housing rental prices, and its relative contribution varies with temporal periods. More specifically, how the*

relative contribution of school quality changes over time is consistent with the schedule of primary school enrollment and sensitive to policy intervention. The difference in difference model foregrounds that the equitable housing policy does result in rental prices hike in high-quality school districts, i.e., a 13.5 % rental premium of housings within high-quality school districts compared with those within ordinary ones. We conclude that the equitable housing policy fails to achieve the expected goal and propose alternative suggestions for mitigating social inequalities in education accessibility. This study demonstrates a novel methodological framework for evaluating the social consequence of equitable housing policy based on social media data. It unravels how housing rental changes with school district division and the capitalization effect of school quality in housing rental prices.

- Professor He has been invited to given a seminar entitled “New Frontiers in Urban China Studies”, via Zoom, at the Department of Real Estate, East China Normal University on 30 April 2020.

5. Dr. Derrick Ho

- Dr. Derrick Ho has published the following journal papers:

- (i) Wang, H., Li J.W., Gao, M., Chan, T.C., Gao, Z.Q., Zhang, M.Y., Li, Y.B., Gu, Y.F., Chen, A.B., Yang, Y.J., Ho, H.C. Spatiotemporal variability in long-term population exposure to PM_{2.5} and lung cancer mortality attributable to PM_{2.5} across the Yangtze River Delta (YRD) region over 2010–2016: A multistage approach, *Chemosphere*, vol. 257, 127153, 2020, ISSN 0045-6535. DOI: <https://doi.org/10.1016/j.chemosphere.2020.127153>

Abstract: *The Yangtze River Delta region (YRD) is one of the most densely populated regions in the world, and is frequently influenced by fine particulate matter (PM_{2.5}). Specifically, lung cancer mortality has been recognized as a major health burden associated with PM_{2.5}. Therefore, this study developed a multistage approach 1) to first create dasymetric population data with moderate resolution (1 km) by using a random forest algorithm, brightness reflectance of nighttime light (NTL) images, a digital elevation model (DEM), and a MODIS-derived normalized difference vegetation index (NDVI), and 2) to apply the improved population dataset with a MODIS-derived PM_{2.5} dataset to estimate the association between spatiotemporal variability of long-term population exposure to PM_{2.5} and lung cancer mortality attributable to PM_{2.5} across YRD during 2010–2016 for microscale planning. The created dasymetric population data derived from a coarse census unit (administrative unit) were fairly matched with census data at a fine spatial scale (street block), with R² and RMSE of 0.64 and 27,874.5 persons, respectively. Furthermore, a significant urban-rural difference of population exposure was found. Additionally, population exposure in Shanghai was 2.9–8 times higher than the other major cities (7-year average: 192,000 µg·people/m³·km²). More importantly, the relative risks of lung cancer mortality in high-risk areas were 28%–33% higher than in low-risk areas. There were 12,574–14,504 total lung cancer deaths attributable to PM_{2.5}, and lung cancer deaths in each square kilometer of urban areas were 7–13 times higher than for rural areas. These results indicate that moderate-resolution information can help us understand the spatiotemporal variability of population exposure and related health risk in a high-density environment.*

- (ii) Ho, H.C., Wai, K.M., He, M. *et al.* Mortality risk of a future heat event across a subtropical city: implications for community planning and health policy. Natural Hazards, vol. 103, 623-637, 2020. DOI: <https://doi.org/10.1007/s11069-020-04003-x>

Abstract: *In this study, we applied the Weather Research and Forecasting model to project 2050 urban and rural temperature. We applied a time-stratified analysis to compare it with mortality between 2001 and 2014 and between 2011 and 2014, to estimate the elevated risk of a 2050 heat event. We included change in daytime versus nighttime and urban versus rural temperatures as factors to project mortality, to evaluate the potential influence of climate change on mortality risk. Increases of 2.9 °C and 2.6 °C in maximum and minimum air temperature are projected in a 2050 heat event, with a day and a night that will have respective temperatures 9.8 °C and 4.9 °C higher than 2001–2014. Significantly higher mortality risk is forecasted in 2050 compared to 2001–2014 (IRR 1.721 [1.650, 1.796]) and 2011–2014 (IRR 1.622 [1.547, 1.701]) without consideration of temperature change. After consideration of changing temperature, change in maximum temperature in rural areas will induce the highest mortality risk during 2050, possibly due to rapid urbanization across the city, and with the second highest mortality risk induced by the change in minimum temperature in urbanized areas, possibly because local people in the city have been adapted to the maximum level of urban thermal stress during a summer day. Improvements to heat warning systems and sustainable planning protocols are urgently needed for climate change mitigation.*

- (iii) Ho, H.C., Wong, M.S. & Chan, T. Spatially differentiating the effects of long-term air pollution on specific causes of death from cardiovascular and respiratory mortality in Hong Kong: a territory-wide register-based study. Air Quality, Atmosphere, and Health, vol. 13, 721-730, 2020. DOI: <https://doi.org/10.1007/s11869-020-00828-4>

Abstract: *Previous studies have evaluated the effects of air pollution on various causes of death. However, there are few studies directly differentiating the regional effects of air pollution on specific causes of death from cardiovascular and respiratory mortality. It is important to target specific diseases and air pollutants for environmental management, in order to develop a sustainable environment. Therefore, a territory-wide register-based study was developed with cause-specific mortality data in Hong Kong between 2007 and 2014 (n = 257,090). Five groups of decedents were directly compared with the two control groups (cardiovascular and respiratory deaths), separately, based on binomial logistic regressions. Three air pollutants (NO₂, PM_{2.5}, black carbon (BC)) were selected to evaluate how spatial distribution of long-term air pollution exposure can induce the difference in mortality risks from two control groups. Based on the results, different air pollutants can contribute to different impact on mortality risk. PM_{2.5} and BC contributed to higher effects on mortality associated with mental and behavioral disorders than those linked to cardiovascular and respiratory diseases. BC can contribute to a higher mortality risk for mortality associated with diseases of the nervous and digestive systems than with respiratory diseases. There was also a stronger influence of neighborhood PM_{2.5} on mortality associated with diseases of the genitourinary system than with cardiovascular and respiratory diseases, and a stronger impact of neighborhood NO₂ and BC on cancer-related mortality than on respiratory mortality. In conclusion, several air pollutants have greater impact*

on cause-specific mortality than cardiovascular and respiratory mortality. Therefore, it is necessary to have a comprehensive and systematic investigation to evaluate how different types of air pollutants influence various types of cause-specific mortality. In addition, specific health protocols, enhancement of urban design and improvement of environmental hygiene should be conducted for specific types of air pollution and deprived populations, rather than targeting solely the people with cardiorespiratory diseases.

- (iv) James, S.L., Castle, C.D., Dingels, Z.V., et al. [Dr. Derrick Ho as the 199th of 597 GBD collaborator] (2020). Global injury morbidity and mortality from 1990 to 2017: results from the Global Burden of Disease Study 2017, *Injury Prevention*, published online first: 24 April 2020. DOI: <http://doi.org/10.1136/injuryprev-2019-043494>

Background: Past research in population health trends has shown that injuries form a substantial burden of population health loss. Regular updates to injury burden assessments are critical. We report Global Burden of Disease (GBD) 2017 Study estimates on morbidity and mortality for all injuries.

Methods: We reviewed results for injuries from the GBD 2017 study. GBD 2017 measured injury-specific mortality and years of life lost (YLLs) using the Cause of Death Ensemble model. To measure non-fatal injuries, GBD 2017 modelled injury-specific incidence and converted this to prevalence and years lived with disability (YLDs). YLLs and YLDs were summed to calculate disability-adjusted life years (DALYs).

Findings: In 1990, there were 4 260 493 (4 085 700 to 4 396 138) injury deaths, which increased to 4 484 722 (4 332 010 to 4 585 554) deaths in 2017, while age-standardised mortality decreased from 1079 (1073 to 1086) to 738 (730 to 745) per 100 000. In 1990, there were 354 064 302 (95% uncertainty interval: 338 174 876 to 371 610 802) new cases of injury globally, which increased to 520 710 288 (493 430 247 to 547 988 635) new cases in 2017. During this time, age-standardised incidence decreased non-significantly from 6824 (6534 to 7147) to 6763 (6412 to 7118) per 100 000. Between 1990 and 2017, age-standardised DALYs decreased from 4947 (4655 to 5233) per 100 000 to 3267 (3058 to 3505).

Interpretation: Injuries are an important cause of health loss globally, though mortality has declined between 1990 and 2017. Future research in injury burden should focus on prevention in high-burden populations, improving data collection and ensuring access to medical care.

- (v) Wong, M. S., Ho, H. C., & Tse, A. (2020). Geospatial context of social and environmental factors associated with health risk during temperature extremes: Review and discussion. *Geospatial Health*, vol. 15, no. 1, 2020. DOI: <https://doi.org/10.4081/gh.2020.814>

Abstract: This study reviews forty-six publications between 2008 and 2017 dealing with socio-environmental impacts on adverse health effects of temperature extremes, in a geospatial context. The review showed that most studies focus on extremely hot weather but lack analysis of how spatial heterogeneity across a region can influence cold mortality/morbidity. There are limitations regarding the use of temperature datasets for spatial analyses. Only a few studies have applied air temperature datasets with high spatial resolution to health studies, but none of these studies have used anthropogenic heat as a

factor for analysis of health risk. In addition, the elderly is generally recognized as a vulnerable group in most studies, but the interaction between old age and temperature risk varies by location. Other socio-demographic factors such as low income, low education and accessibility to community shelters may also need to be considered in the future. There are only a few studies which investigate the interaction between temperature and air pollution in a geospatial context, despite the fact that this is a known interaction that can influence health risk under extreme weather. In conclusions, although investigation of temperature effects on health risk is already at the “mature stage”, studies of socio-environmental influences on human health under extreme weather in a geospatial context is still being investigated. A comprehensive assessment is required to analyse how the spatial aspects of the geophysical and social environments can influence human health under extreme weather, in order to develop a better community plan and health protocols for disaster preparedness.

6. Dr. Weifeng Li

- has published the following journal papers:

- (i) Zhang, A.Q., Li, W.F., Wu, J.Y., Lin, J., Chu, J.Q., & Xia, C. How can the urban landscape affect urban vitality at the street block level? A case study of 15 metropolises in China. Environment and Planning B: Urban Analytics and City Science, 2020. DOI: <https://doi.org/10.1177/2399808320924425>

Abstract: *Urban vitality, as a metric, measures the attractiveness and competitiveness of a city and is a driver of development. As the physical and social space of human activities, the urban landscape has close connections with urban vitality according to classical theories. However, limited quantitative criteria for the urban landscape and gaps between macro urban planning and micro design create difficulties when constructing a vibrant city. In this study, we quantitatively examined the relationship between the urban landscape and urban vitality at the street block level using geospatial open data to discover where, how, and to what extent we could improve urban vitality, taking 15 Chinese metropolises as a case study. Results indicate that, among the three aspects of the urban landscape considered, the city plan pattern has the highest effect on stimulating vitality, followed by the land use and the patterns of building form. Specifically, the three-dimensional form of buildings has a greater effect than a two-dimensional form. In addition, convenient transportation, a compact block form, diverse buildings, mixed land use, and high buildings are the main characteristics of vibrant blocks. The results also show that the effects of the urban landscape have spatial variations and obvious diurnal discrepancies. Furthermore, over 20 and 33% of the blocks in these cities are identified as low-vitality blocks during the day and night, respectively, and are then categorized into six different types. The identification of the common characteristics of these low-vitality blocks can be taken as references for designing a vibrant urbanity.*

- (ii) Guo, H.G., Li, W.F., Wu, J.S. Ambient PM_{2.5} and Annual Lung Cancer Incidence: A Nationwide Study in 295 Chinese Counties. International Journal of Environment Research and Public Health, vol. 17, issue 5, 1481, 2020. DOI: <https://doi.org/10.3390/ijerph17051481>

Abstract: *Most studies have examined PM_{2.5} effects on lung cancer mortalities, while few nationwide studies have been conducted in developing countries to*

estimate the effects of PM_{2.5} on lung cancer incidences. To fill this gap, this work aims to examine the effects of PM_{2.5} exposure on annual incidence rates of lung cancer for males and females in China. We performed a nationwide analysis in 295 counties (districts) from 2006 to 2014. Two regression models were employed to analyse data controlling for time, location and socioeconomic characteristics. We also examined whether the estimates of PM_{2.5} effects are sensitive to the adjustment of health and behaviour covariates, and the issue of the changing cancer registries each year. We further investigated the modification effects of region, temperature and precipitation. Generally, we found significantly positive associations between PM_{2.5} and incidence rates of lung cancer for males and females. If concurrent PM_{2.5} changes by 10 µg/m³, then the incidence rate relative to its baseline significantly changes by 4.20% (95% CI: 2.73%, 5.88%) and 2.48% (95% CI: 1.24%, 4.14%) for males and females, respectively. The effects of exposure to PM_{2.5} were still significant when further controlling for health and behaviour factors or using 5-year consecutive data from 91 counties. We found the evidence of long-term lag effects of PM_{2.5}. We also found that temperature appeared to positively modify the effects of PM_{2.5} on the incidence rates of lung cancer for males. In conclusion, there were significantly adverse effects of PM_{2.5} on the incidence rates of lung cancer for both males and females in China. The estimated effect sizes might be considerably lower than those reported in developed countries. There were long-term lag effects of PM_{2.5} on lung cancer incidence in China.

7. Dr. Jun Ma

- Dr. Ma has published the following journal paper:

Ma, J., Cheng, J. C.P., Xu, Z.R., Chen, K.Y., Lin, C.Q., Jiang, F.F. Identification of the most influential areas for air pollution control using XGBoost and Grid Importance Rank, *Journal of Cleaner Production*, vol. 274, 122835, 2020, ISSN 0959-6526. DOI: <https://doi.org/10.1016/j.jclepro.2020.122835>

Abstract: *Due to the rising concern about air quality, air pollution prediction and control has been a hot research domain for scholars in recent years. Many studies have been conducted to predict and control air pollution using different kinds of methods. However, these studies did not explore the air quality interactions between areas and areas. They cannot answer questions like “which area would have a more substantial spatial influence on others?”, and “which area should be of focus when controlling the air pollution considering the air movements?” To identify the most influential areas for air pollution control can effectively benefit policymaking and achieve better results. To this end, this study proposes a methodology framework combining XGBoost and Grid Importance Rank (GIR). The GIR technique is inspired by the Google page rank algorithm, which is widely used in ranking web pages based on their influences. Combined with the mechanism of the variable importance in XGBoost, the proposed method can identify the areas that have the most substantial influence on others, and these areas should be of focus when controlling the air quality. A case study in the northwestern U.S. is conducted to validate our methodology. The results show that XGBoost can well model air pollution interactions between areas and areas. The modeling R-square of PM2.5 forecasting can reach 0.9631. The importance map indicates that the government should give priority to control air pollution in southern Oregon considering the impact of this region on the northwestern U.S.*

Keywords: *Air pollution control; Grid importance rank; The most influential areas; XGBoost*

8. Dr. Jiangping Zhou, Dr. Weifeng Li and Dr. Xingjian Liu

- Funded by a HK\$ 2 million grant from the Hong Kong Innovation and Technology Commission (HKITFC), Dr. Zhou, Dr. Li and Dr. Liu are leading a research team from FoA to work on an HKITFC General Support Programme project entitled “Inter-Modal Transport Data-Sharing”. This project’s original commencement date was 1 January 2020. Given the outbreak of the COVID-19, the revised/approved commencement date now is 1 July 2020. A Working Group has been formed for representatives from academia, consultancies, transport operators, vendors, government agencies, and NGOs to work on a pilot project concerning how data from different entities can be pooled securely and exploited efficiently to improve travelers’ experience in the Exchange Square Public Transport Interchange. In a year, the project will deliver identifiable, practical, and sustainable outcomes of use cases for inter-modal transport based upon the pilot project that are relevant to Hong Kong’s transport ecosystem.

9. Professor Bo Sin Tang

- Professor Tang has published the following journal papers:

- (i) Tang, B.S., Wong, K.T. Assessing externality: successive event studies on market impacts of new housing development on an old neighbourhood. Environment and Planning B: Urban Analytics and City Science, vol. 47, issue 1, 156-173, 2020. DOI: <https://doi.org/10.1177/2399808318774333>

Abstract: *This study assesses the externality of three new master-planned housing estate development projects on an old residential area in Hong Kong. Replicating the methodology of an event study, this paper presents the changes to the market values and the turnover of property transactions of the apartments in the existing neighbourhood before and after the successive completion of these three new projects over a period of 10 years. Our findings have identified a diverse picture about the impacts of these new housing estates on the neighbourhood. Positive externalities occur under specific circumstances related to the facility provision, spatial design and interfacing with the neighbourhood and background of the new projects. Housing externality does not depend only on the degree of geographical proximity. The policy implication is that urban planning can expand the positive spillover of infill redevelopment not only by replacing the urban dis-amenities by new buildings, but also through a responsive and beneficial integration of the new development with the existing neighbourhood.*

- (ii) S. Wong, B.S. Tang, J. L. Liu. Village Elections, Grassroots Governance and the Restructuring of State Power: An Empirical Study in Southern Peri-urban China. The China Quarterly, vol. 241, 22-42, 2020. DOI: <http://doi.org/10.1017/S0305741019000808>

Abstract: *China's urbanization has revitalized grassroots governance under which millions of villagers have become increasingly keen to participate in grassroots elections and influence decision making in their village affairs. To maintain its political legitimacy over a rapidly transforming society, the authoritarian party-state has progressively promoted open, competitive grassroots elections in response to the increasing demand by villagers for more public participation. Based on in-depth field research in urbanizing villages in southern China, this article provides an empirical analysis of how the local state has adopted different interventionist strategies in elections to support villagers' active participation while sustaining its direct leadership over daily village governance. Our findings explain why the recent development of open and transparent grassroots elections is reinforcing the ruling capacity of the socialist state rather than enhancing self-governance and grassroots democracy, although villagers now have more opportunities to defend their economic and social rights through elections.*

10. Professor Anthony G. O. Yeh

- Professor Yeh has published two journal papers:

- (i) Bian, F., Yeh, A. G.O. Spatial-economic impact of missing national highway links on China's regional economy, Transportation Research Part D: Transport and Environment, vol. 84, 102377, 2020, ISSN 1361-9209. DOI: <https://doi.org/10.1016/j.trd.2020.102377>

Abstract: *The widespread missing link phenomenon in transport networks has been identified in numerous countries. How regional economy responds to missing links has remained a 'missing link'. This study aims to fill the gap through investigating the spatial–economic impacts of missing links on the regional economy in the case of missing national highway links (ML-Hs) in China. Taking the difference of the regional road accessibility values between planned and real scenarios, this paper finds that the spatial impact of missing national highway links on regional road accessibility varies across Chinese cities. Cities that are directly associated with missing national highway links or in Southwest China are most vulnerable to the road accessibility reductions caused by missing national highway links. We also estimate the spatial–economic impacts of missing national highway links on regional economy using prefecture-level cross-sectional data in China. Econometric results confirm that missing national highway links induced road accessibility reductions negatively associate with the regional economy in the maximum and minimum distance decay scenarios, implying that regional economy decreases with the increase in the level of missing highway links induced road accessibility reductions. Interestingly, cities with missing national highways are positively associated with regional economy, suggesting that the persistence of missing national highway links in developed cities is at the expense of less developed cities which are more sensitive to missing highway links induced road accessibility reductions. Such asymmetrical results provide empirical evidence on the distributive effect of missing national highway links on China's regional economy.*

Keywords: *Missing links; Accessibility; Regional economy; Highway networks; Distributive effects; Sustainable development*

- (ii) Chen, Z., Yeh, A.G.O. Socioeconomic variations and disparity in space–time accessibility in suburban China: A case study of Guangzhou. *Urban Studies*, 2020. DOI: <https://doi.org/10.1177/0042098020916416>

Abstract: *The concept of conventional place-based accessibility, despite being well researched, tends to ignore people's space–time constraints arising from mandatory activities (e.g. work and household duties), which confine people's potential movement and delimit the accessible opportunities. As people with different socioeconomic statuses may have different space–time constraints even while living in similar locations, using the place-based measures could lead to an underestimation of accessibility inequality. This study applies a space–time measure to unravel the disparities in service accessibility in suburban China.*

Since the late 1970s, suburbanisation in Chinese cities has fostered income inequality and has elevated other dimensions (e.g. institutional status and gender) of disparity within each income class. Within this context, we conduct a case study of suburban neighbourhoods in Guangzhou, based on the activity diary data derived from a home-based questionnaire survey. Findings indicate that the use of a space–time measure effectively captures the disparities in service accessibility among residents in suburban Guangzhou. On the basis of structural equation modelling, we further identify that certain socioeconomic groups (e.g. high-income residents, public sector workers, local hukou holders, male household heads and welfare housing residents) tend to experience fewer

space–time constraints from rigid activities, such as work, commuting and household duties, and are thus more advantaged in accessing service facilities.

These findings imply that urban planning should address the space–time perspective to promote equal service access for the highly heterogeneous social groups in suburban China and to incorporate time-sensitive policies (e.g. flexitime policies).

HHDC

1. Ms. Ka Yan Yvonne Lai (PhD student, supervised by Dr. Chinmoy Sarkar), Dean Webster, Ms. Sarika Kumari and Dr. Chinmoy Sarkar got a *Commentary* paper accepted:

Lai, K.Y., Webster, C., Kumari, S., Sarkar, C. Commentary: The nature of cities and the COVID-19 pandemic. *Current Opinion in Environmental Sustainability* (IF: 5.658), 2020 (*accepted-in-press on 11 Aug 2020*).

2. Ms. Ka Yan Yvonne Lai, Dr. Chinmoy Sarkar, Dr. Michael Ni, Professor John Gallacher and Dean Webster

- published a paper in *Environmental Research* (IF: 5.715). This was a collaboration with Li Ka Shing Faculty of Medicine, HKU and University of Oxford, UK.

Lai, K.Y., Sarkar, C., Ni, M.Y., Gallacher, J., Webster, C. Exposure to light at night (LAN) and risk of obesity: a systematic review and meta-analysis of observational studies. *Environmental Research*, vol. 187, 109637, 2020, ISSN 0013-9351. DOI: <https://doi.org/10.1016/j.envres.2020.109637>

Abstract: *[Background] There is emerging evidence of the association between light at night (LAN) exposure and weight gain. [Objective] We aim to conduct a systematic review and meta-analysis of observational studies on the association between LAN exposure and risk of obesity in human subjects. [Methods] Peer-reviewed observational studies were systematically searched from MEDLINE (EBSCO), Academic Search Complete (EBSCO), CINAHL Plus (EBSCO) and PubMed up to December 24, 2019. Random-effects models were developed to estimate the associations between LAN exposure and weight-related outcomes of overweight and obesity as measured by body mass index (BMI), waist circumference, waist-hip-ratio and waist-to-height-ratio. The I² statistic was used to assess the degree of heterogeneity across studies. The National Toxicology Program's Office of Health Assessment and Translation (OHAT) risk of bias rating tool and the Grading of Recommendations Assessment, Development and Evaluation (GRADE) guideline were respectively employed to assess the risk of bias and to appraise the quality of the generated evidence. [Results] A total of 12 studies (three with longitudinal and nine of cross-sectional design) published between 2003 and 2019 were included for systematic review, while seven of them fulfilling the inclusion/exclusion criteria were included in the meta-analysis. A higher LAN exposure was significantly associated with 13% higher odds of overweight (BMI≥25 kg/m²) (Summary Odds Ratio; SOR: 1.13, 95% CI: 1.10–1.16) with low heterogeneity (I² = 27.27%), and 22% higher odds of obesity (BMI≥30 kg/m²) (SOR: 1.22, 95% CI: 1.07 – 1.38) with substantial heterogeneity (I² = 85.96%). Stratifying analyses by the levels of measurement of LAN exposures (macro-, meso- and micro-levels) and time of LAN measurement (including before and while sleeping) consistently produced robust estimates, with*

higher exposure to LAN being positively associated with poorer weight outcomes. Assessment of risk of bias identified substantial detection bias for exposure, with over half of the pooled studies employing subjective LAN measures. The overall evidence of the association between LAN exposure and risk of obesity was rated as 'moderate' as per the GRADE guideline. [Conclusions] Exposure to LAN was reported to be a significant risk factor for overweight and obesity. Prospectively designed future studies with objectively measured multi-level LAN exposures and weight outcomes are required.

Keywords: Light at night; meta-analysis; body mass index; obesity

3. Ms. Ka Yan Yvonne Lai and Dr. Chinmoy Sarkar

- published a paper in Urban Forestry and Urban Greening (IF: 4.021):

Lai, K.Y.*, Sarkar, C., Sun Z.W., Scott, I. Are greenspace attributes associated with perceived restorativeness? A comparative study of urban cemeteries and parks in Edinburgh, Scotland. Urban Forestry and Urban Greening, vol. 53, 126720, 2020, ISSN 1618-8667. DOI: <https://doi.org/10.1016/j.ufug.2020.126720>

Abstract: *The health effects of under-utilized and passive greenspace with specialist functions, for example the urban cemetery have been rarely studied. In this study, we aim to examine the differences in the associations between greenspace attributes and perceived restorativeness (defined as recovering from mental fatigue) across two urban greenspace typologies; namely, parks and cemeteries. Among sub-samples of the study participants, this research further explores if social (i.e., having knowledge of or a previous relationship to a deceased person interred in the cemetery) and geographical distance (i.e., residential street distance to the cemetery) had significant beneficial effect upon participants' perceived restorativeness. A face-to-face on-site survey was conducted in Edinburgh comprising $N_1 = 113$ and $N_2 = 120$ participants from parks and cemeteries respectively. Geographic Information System (GIS) was used to measure the distance from interviewees' home to the study sites, while multivariate linear regression models adjusting for sociodemographic covariates assessed the strength and significance of the associations. Among the greenspace attributes, pleasantness and aesthetic quality remained significant predictors of perceived restorativeness in case of both parks and cemeteries. In addition, safety was significantly associated with perceived restorativeness in the park-exposure group, whereas presence of good paths was significant only in the cemetery-exposure group. Significant effects of greenspace attributes upon restorativeness were reported only among participants without a deceased person interred in the cemetery and those residing beyond a distance of 800 meters. The study findings advance our knowledge of the restorativeness of specific greenspace features in the parks and cemeteries and point to the need to integrate cemetery strategy with the local authority's urban greenspace planning and policy for optimizing the use of these thus far passive green areas.*

Keywords: Burial space, environment, GIS, neighbourhood psychological restoration.

4. Ms. Ka Yan Yvonne Lai

- published a paper in International Journal of Environmental Research and Public Health (IF: 2.849) in collaboration with University of Edinburgh, UK.

Sun, Z. W., Lai, K.Y., Bell, S., Scott I., Zhang, X. M. Exploring the Associations of Walking Behavior with Neighborhood Environments by Different Life Stages: A Cross-Sectional Study in a Smaller Chinese City. International Journal of Environmental Research and Public Health, vol. 17, issue 1, 237, 2020. DOI: <https://doi.org/10.3390/ijerph17010237>

Abstract: *Because of high population density and rapid urbanization, different human life stages have distinct growth experiences, leading to different lifestyles and age-spatial separation in the same neighborhood environment, particularly in smaller Chinese cities. The relationship of environment to physical activity may differ from western or larger Chinese cities. This study examined the associations of walking duration to the neighborhood environment and other factors, and explored the nuances of walking behavior for different life stages of adults in a smaller Chinese city, Yuncheng. An interviewer-administered questionnaire survey (n = 173) and face-to-face interviews (n = 19) were conducted in August 2017. Descriptive analysis and multiple linear regression were performed to describe walking motivations, sociodemographic characteristics, neighborhood environments, and their impacts on walking duration across three life stages. The quantitative findings were followed by interviews to validate and interpret them. Our results showed no positive associations of land-use mix (LUM) and residential density on walking duration, and even inverse associations of LUM-recreation and LUM-education for specific life stages were identified. Younger people's walking behavior was more related to consumption amenities distinct from those of older people. Our findings suggest that using walkable neighborhood policies (e.g., high residential density and land-use mix) to increase physical activity might be ineffective in smaller Chinese cities.*

Keywords: walkability; age-spatial separation; everyday life; neighborhood environment; smaller Chinese cities.

Fabrication and Material Technologies Lab

1. Christian Lange

- The Coral Restoration project was commissioned by the Agriculture Fisheries and Conservation Department (AFCD) to help to restore the endangered corals at Hoi Ha Wan Marine Park in Hong Kong. It was jointly developed by the Robotic Fabrication Lab FoA and the Swire Institute of Marine Biology (SWIMS). The initiative is one of the first of its kind to utilize 3D printing technology in combination with Terracotta to enhance coral restoration.

Our Robotic Fabrication Lab (Lidia Ratoi, Dominic Co, Jason Hu, and myself) worked for around three months on the design and fabrication method. Production started in December 2019 and was finished in early July 2020. The lab printed 128 tiles mimicking the patterns found in brain corals. The tiles are designed to aid coral growth by providing an elevated and porous platform that prevents sedimentation to occur, one of the major problems in Hong Kong waters. The material of Terracotta also ensures the least impact on the environment.

Our partners of SWIMS deployed the tiles and implanted the corals in late July. The experiment from their side is focused on understanding how different kinds of coral populations impact biodiversity. The team will monitor the sites for the

coming years, and hopefully, the project will regenerate the coral population in the area, thus contributing to the local marine biodiversity.

I believe it was for all team members a very rewarding project to work on. Not only bringing architectural design and robotic fabrication into a new realm but also by establishing new cross-disciplinary research and contributing to a pressing issue of today's world community.

The project has already generated media attention, and the team is already working on the next iteration. This time with a focus on the relationship of the complexity of space and its impact on biodiversity.



English Press:

<https://www.hku.hk/press/press-releases/detail/21387.html>

<https://www.fastcompany.com/90534835/these-3d-printed-tiles-are-helping-restore-devastated-coral-reefs>

<https://hk.asiatatler.com/life/hong-kong-coral-restoration-3d-printing>

<https://hongkongfp.com/2020/08/03/research-team-seeks-to-restore-hong-kong-coral-reefs-with-3d-printed-tiles/>

<https://www.designboom.com/technology/reformative-coral-habitats-3d-printed-clay-tiles-07-29-2020/>

<https://3dprint.com/270809/hong-kong-researchers-3d-printing-clay-tiles-to-restore-damaged-coral-reefs/>

Short Clip:

<https://www.facebook.com/hashtag/hkseastories>

Others:

<https://www.3dprintingmedia.network/hku-architects-and-marine-scientists-co-develop-novel-3d-printed-reef-tiles/>

<https://www.miragenews.com/hku-architects-and-marine-scientists-co-develop-novel-3d-printed-reef-tiles-to-repopulate-coral-communities/>

<https://hongkongfp.com/2020/08/03/research-team-seeks-to-restore-hong-kong-coral-reefs-with-3d-printed-tiles/>

<https://indiaeducationdiary.in/hku-architects-and-marine-scientists-co-develop-novel-3d-printed-reef-tiles-to-repopulate-coral-communities-and-serve-biodiversity-in-hong-kong/>

<https://generationt.asia/ideas/hong-kong-coral-restoration-3d-printing>
<https://worlduninews.shafagna.com/EN/AL/549407>

<https://opengovasia.com/hku-architects-and-marine-scientists-co-develop-3d-printed-reef-tiles/>

<https://3dprint.com/270809/hong-kong-researchers-3d-printing-clay-tiles-to-restore-damaged-coral-reefs/>

<https://hd.stheadline.com/news/realtime/hk/1837600/%E5%8D%B3%E6%99%82-%E6%B8%AF%E8%81%9E-%E6%B8%AF%E5%A4%A7%E7%A0%943D%E6%89%93%E5%8D%B0%E4%BA%BA%E5%B7%A5%E7%A4%81%E7%9B%A4-%E5%BE%A9%E8%82%B2%E7%8F%8A%E7%91%9A%E7%BE%A4%E8%90%BD>

<http://hk.crntt.com/doc/1058/4/3/7/105843711.html?coluid=7&kindid=0&docid=105843711&mdate=0805072413>

<https://topick.hket.com/article/2714709>

https://hk.on.cc/hk/bkn/cnt/news/20200804/bkn-20200804160321504-0804_00822_001.html

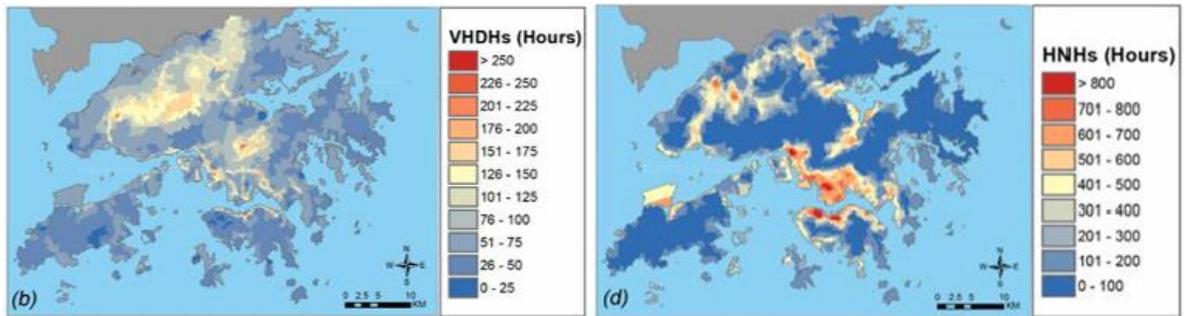
iLab

1. Professor Wilson Lu, Dean Webster, Dr. Simon Chi, Zhikang Bao and Wendy Lee
- their co-authored paper has been accepted for publication:

Lu, W.S., Webster, C., Chi, S.B., Bao, Z.K., Lee, W.M.W. (2020). Cross-jurisdictional construction waste material trading: Learning from the smart grid, Journal of Cleaner Production. [Manuscript ID: JCLEPRO-D-20-06594R2]

SHDC

1. Dr. Ren Chao
- together with Dr. Kevin Lau of CUHK Institute of Future Cities, held a press conference via zoom on 24 August to present the findings of their RIF research project on Hong Kong heat-health impact in last two years. The two main messages delivered are:
 - (1) the importance of hot nights to heat-related health risks
 - (2) the spatial variability of extreme hot weather in Hong Kong



Congested environment, poor air ventilation and lack of green spaces in the urban area attribute to the spatial difference between very hot day hours for daytime (left) and hot night hours for nighttime (right)

Major local media has reported the findings of this study, including TVB, RTHK, Mingpao, SCMP and Apple Daily. Below is the report from SCMP:

Hong Kong's hot nights and even hotter days bring higher risk of mortality for women and the elderly, new study finds | South China Morning Post
<https://www.scmp.com/news/hong-kong/health-environment/article/3098611/hong-kongs-hot-nights-and-even-hotter-days-bring>

- published 4 papers in Urban Climate, which are highly cited ones based on the Scopus records. Urban Climate journal selects only the top 25 highly cited papers (since 2017) to publicize on the website: <https://www.journals.elsevier.com/urban-climate/most-cited-articles>

(i) Cai, M., Ren, C., Xu, Y., Lau, K.K.L., Wang, R. Investigating the relationship between local climate zone and land surface temperature using an improved WUDAPT methodology – A case study of Yangtze River Delta, China, Urban Climate, 24, 485-502, 2018. ISSN 2212-0955, DOI: <https://doi.org/10.1016/j.uclim.2017.05.010>.

Abstract: The concept of Local Climate Zone (LCZ) was developed to quantify the relationship between urban morphology and urban heat island (UHI) phenomenon. Each LCZ is supposed to represent homogeneous air temperature. However, there is inadequate data for verifying the air temperature differences between LCZ classes. Therefore, it is necessary to utilize alternative temperature data which allow more comprehensive assessment of the effect of LCZ on local climatic conditions. Land surface temperature (LST) acquired from satellite images can be used to establish the relationship between LST and LCZ by providing continuous data on surface temperature. This paper aims to investigate how LST represents the UHI intensity determined by using an improved method of the World Urban Database and Portal Tool (WUDAPT) to develop the LCZ map of the Yangtze River Delta (YRD) megaregion. The results show that LST in different YRD cities is generally consistent with the LCZ classes with higher LST observed in built-up LCZ classes. The diverse urban morphology and temporal vegetation variation are likely the reasons to inconsistencies in LCZ 9, and LCZ A to D. Findings of this paper provide a better understanding of how urban morphology affects local climate and more accurate delineation of LCZ classes.

(ii) Zheng, Y.S., Ren, C., Xu, Y., Wang, R., Ho, J., Lau, K., Ng, E. GIS-based mapping of Local Climate Zone in the high-density city of Hong Kong, Urban Climate, 24, 419-448, 2018, ISSN 2212-0955, DOI: <https://doi.org/10.1016/j.uclim.2017.05.008>.

Abstract: *This study aims to develop a Local Climate Zone (LCZ) classification map and establish the associated [urban morphology](#) database as a cross-discipline information platform for climate research and planning decision making in Hong Kong. [Geographic information system](#) (GIS) was applied to synergize various kinds of planning data, and classify land surface properties following the LCZ framework. Sensitivity tests were performed to identify the appropriate [raster](#) resolution and [geolocation](#) for LCZ classification. Next, a set of urban morphology analysis maps were developed. Based on the spatial information supported by the urban morphology analysis maps, land surface properties were classified according to the LCZ classification criteria, and an LCZ classification map was formulated. Finally, [spatial distribution](#) pattern of LCZ classes was analyzed, and LCZ datasets were established following the standardized procedure suggested by the LCZ framework. The LCZ classification system not only provides site metadata for UHI observation in Hong Kong, but also expands the global LCZ database under the high-density urban scenario. This study proposes an integrative GIS-based method to process various kinds of planning data for urban morphology analysis and LCZ-based land surface classification, which is also applicable to other cities with a comprehensive set of planning information.*

RUL

RUL's design project in Ulaanbaatar "Ger Innovation Hub" has been featured at The Guardian, Dezeen and designboom. For details, please visit the links:

Welcome to the yurt-opolis! How Mongolia is helping its nomads adapt to big city life.
<https://www.theguardian.com/artanddesign/2020/may/17/yurt-opolis-mongolia-city-life-ulaanbaatar-community-hub>

Rural Urban Framework builds tent-style community centre in Ulaanbaatar
<https://www.dezeen.com/2020/05/12/ger-innovation-centre-rural-urban-framework-ulaanbaatar-mongolia-architecture/>

Rural urban framework's ger innovation hub enables a sense of community in Mongolia

<https://www.designboom.com/architecture/rural-urban-framework-ger-innovation-hub-mongolia-05-13-2020/>





(Source: Dezeen)

Urban Ecologies Design Lab (UEDL)

1. Dr. Juan Du

- In collaboration with Ms. Jo Hayes, CEO of Habitat for Humanity Hong Kong Limited, Dr. Du's research project entitled "Housing in Place: Quality Homes for Sustainable Hong Kong", has secured a funding award from the Bank of China Centenary Charity Programme at the amount of HKD10 million, for a project period of 5 years from 2020 to 2025.

Project Objectives: *Hong Kong is in need of 450,000 new public housing units, for an estimated population of over 1 million, most of whom currently live in cramped substandard housing that are more exposed to Hong Kong's severe challenges of high urban density and subtropics climate. Thus, beyond the quantitative need for additional number of units, there is also an urgent need for qualitative solutions for non-Public housing provisions for Hong Kong's low-income working population. This project aims to generate an environmental and socially specific Quality Homes Design and maintenance demonstration for affordable housing, through providing new social housing, improving existing housing conditions, and empowering a wider housing need-specific population with community resources and support.*