

**Research Assessment Exercise 2020**  
**Impact Case Study**

**University:** The University of Hong Kong (HKU)

**Unit of Assessment (UoA):** 26 – Geography

**Title of case study:** Enhancing Traffic Safety and Walkability to Improve Urban Life for All

**(1) Summary of the impact**

Heavy reliance on private cars in cities and a vehicle-oriented approach to transport policy and planning have dramatically reduced urban walkability and compromised the safety of pedestrians. The UoA is conscious of creating a cityscape that is safe, walkable, and conducive to an active lifestyle. This benefits not only the environment but also society with fewer traffic fatalities, greater mobility and improved health. Since 2004, members have generated world-leading research outputs, which have been highly-recognized both locally (**HKSAR Government**) and internationally (**European Commission, Academy of Social Sciences (FACSS), UK and Eastern Asia Society for Transportation Studies**), leading to significant shifts in public policy and industry practices.

**(2) Underpinning research**

Professor P.C. Lai and Professor B.P.Y. Loo have spearheaded groundbreaking research in prioritizing pedestrian and published high-impact research outputs consistently, with 64 international research partners. The underlying research has been conducted during their service at HKU for the last 20 years. Notably, using geographic information systems (GIS), Lai led an international team in measuring the full range of variation in the built environment across 12 countries on five continents. Their study discovered that walkability (as measured by residential density, street connectivity, and a mix of land uses) is consistently correlated with overall physical activity [3.1]. Furthermore, a collaborative project in which Lai examined 14 cities worldwide suggested that improving the design of the urban environment (for example, increasing the preponderance of urban features) would encourage exercise, foster community public health and raise the quality of urban life [3.2]. As the only Hong Kong participant in the study [3.2], Lai has been responsible for the walkability index calculations and GIS analysis in Hong Kong. Her insights into the local geographical context, namely the city's transit-oriented development and hilly topography, helped explain the association between higher walkability and better health in Hong Kong.

Another key research project, undertaken by Loo with her interdisciplinary (geography, medicine, and psychology) international team, examined walkability and environmental correlates to different physical and mental health indicators among older residents in Hong Kong, Singapore, and Tokyo [3.3]. Using robust research methods including health and behavioural questionnaires, observational surveys, and GIS analysis, Loo led the study and proposed a community-based definition of neighbourhood rather than simply adopting administrative boundaries. The study produced important policy recommendations, suggesting that a priority area for supporting health-sustaining communities should be the development of walkable neighborhoods that emphasize the key dimensions of comfort, convenience, and safety. In terms of its theoretical and empirical contributions, the study confirmed the relevancy of a multiscale environment geographical framework and revealed substantial differences in walkability and health outcomes between different neighbourhoods in the same city.

Another aspect of the underpinning research is road safety. Using mixed research methods, Loo's team developed a walkability audit framework that considers not only the walkway characteristics, such as shading and width, but also the safety and friendliness of the road-crossing environment, such as traffic-light cycles and traffic fatalities, which are highly significant characteristics for older people and dense urban settings [3.3, 3.4, 5.3]. The team partnered with a major local hospital to identify the determining factors in critically wrong road-crossing judgments among older people [3.5]. The study highlighted the importance of road users' awareness of approaching vehicle distance and speed. Using a similar but extended methodology, Loo's team showed that children's activity patterns, travel behaviour (notably walking habits), and well-being within the same city can differ substantially

according to neighbourhood environment and family socio-demographic background [3.6]. Based on the above underpinning research, UoA members envision transforming Hong Kong into an inclusive city by further enhancing traffic safety and walkability at multiple spatial scales, taking care of the needs of transport-disadvantaged groups.

### **(3) References to the research**

- [3.1] Adams, M. A., Frank, L. D., Schipperijn, J., Smith, G., Chapman, J., Christiansen, L. B., Coffee, N., Salvo, D., Du Toit, L., Dygrýn, J., Hino, A. A. F., Lai, P. C., Mavoa, S., Pinzón, J. D., Van De Weghe, N., Cerin, E., Davey, R., Macfarlane, D., Owen, N and Sallis, J. F. (2014). International variation in neighborhood walkability, transit, and recreation environments using geographic information systems: the IPEN adult study. *International Journal of Health Geographics*, 13(1), 43. DOI: 10.1186/1476-072X-13-43.
- [3.2] Sallis, J. F., Cerin, E., Conway, T. L., Adams, M. A., Frank, L. D., Pratt, M., Salvo, D., Schipperijn, J., Smith, G., Cain, K. L., Davey, R., Kerr, J., Lai, P. C., Mitáš, J., Reis, R., Sarmiento, O. L., Schofield, G., Troelsen, J., Van Dyck, D., De Bourdeaudhuij, I. and Owen, N. (2016). Physical activity in relation to urban environments in 14 cities worldwide: a cross-sectional study. *The Lancet*, 387(10034), 2207-2217. DOI: 10.1016/S0140-6736(15)01284-2.
- [3.3] Loo, B. P. Y., Lam, W. W. Y., Mahendran, R. and Katagiri, K. (2017). How is the neighborhood environment related to the health of seniors living in Hong Kong, Singapore, and Tokyo? Some insights for promoting aging in place. *Annals of the American Association of Geographers*, 107(4), 812-828. DOI: 10.1080/24694452.2016.1271306.
- [3.4] Loo, B. P. Y. and Lam, W. W. Y. (2012). Geographic accessibility around health care facilities for elderly residents in Hong Kong: a microscale walkability assessment. *Environment and Planning B: Planning and Design*, 39(4), 629-646. DOI: 10.1068/b36146.
- [3.5] Loo, B. P. Y. and Tsui, K. L. (2016). Contributory factors to critically wrong road-crossing judgements among older people: An integrated research study. *Hong Kong Journal of Emergency Medicine*, 23(1), 13-24. DOI: 10.1177/102490791602300102.
- [3.6] Leung, Y. K., Astroza, S., Loo, B. P. Y. and Bhat, C. R. (2019). An environment-people interactions framework for analysing children's extra-curricular activities and active transport. *Journal of Transport Geography*, 74, 341-358. DOI: 10.1016/j.jtrangeo.2018.12.015.

### **(4) Details of the impact**

The continuous research efforts made by UoA members have had far-reaching impacts.

#### **(4.1) Changing government policies**

The Chief Executive of the HKSAR Government ordered a policy mechanism in December 2015 that encourage private sectors to construct more pedestrian links to enhance connectivity and walkability. The incentive would entail waiving the land premium normally required for lease modification to build such links [5.1.1]. To achieve this policy aim, Loo was awarded the far-reaching “Consultancy Study on ‘Walkability’ in Pedestrian Planning and Enhancement of Pedestrian Network in Hong Kong”. She developed the General Evaluation Mechanism (GEM), which consists of four public-interest tests concerning street walkability, area-wide connectivity, network impact, and people-orientation. The Land and Development Advisory Committee (LDAC) formally endorsed GEM and announced it to the public in April 2017 [5.1.2], and the Development Bureau subsequently issued a support letter to express a heartfelt appreciation on her contributions [5.1.3]. The first successful application was made for a footbridge in Admiralty in May 2017 [5.1.2]. Thereafter, LDAC approved seven footbridges or subways in strategic locations including Wan Chai, Mong Kok and Tsim Sha Tsui [5.1.2]. The impact is profound. Decisions were made at the highest level involving the Chief Executive-in-Council. Since 6,000-12,000 people per hour may cross pedestrian bridges at strategic locations, improving the elevated pedestrian system can benefit millions of people daily. This project has been awarded the Outstanding Transportation Project Award 2019 in recognition of its excellence in both its social impact and planning in transportation projects in Eastern Asia [5.1.4].

Loo has been appointed to the Transport Advisory Committee (TAC) for over five years. TAC, the highest-level advisory body on transport matters in Hong Kong, has contributed to various “Walk in Hong Kong” initiatives announced in the Chief Executive’s 2017 Policy Address. Loo was also invited to participate as one of ten members in the TAC’s Working Group on Relieving Traffic Congestion in Hong Kong [5.2]. Her groundbreaking research contributed to the formulation of numerous recommendations in the subsequent Report on Study of Road Traffic Congestion, including one to increase penalties for congestion-related traffic offences enacted in June 2018. Furthermore, Loo was the project leader of the interdisciplinary team in the “Review of Overseas Practices on the Formulation of Road Safety Strategy and the Effectiveness and Applicability in Hong Kong”. The study has led to high-impact research outputs and the government’s decision to formulate a Road Safety Vision in Hong Kong [5.3].

#### **(4.2) Changing state of practice and raising public awareness**

The European Commission has adopted Lai’s team results to gauge standards for physical activity in Europe in 2016 [5.4, 5.4.1]. Lai has also improved the experience of more than 70,000 entrants every year who participate in the Hong Kong Standard Chartered Marathon, one of the city’s signature international sporting events. The study by Lai’s team into the effects of microclimate variations and crowd settings on runners provided concrete evidence about thermal heat impacts along the marathon route and successfully raised concerns about their consequences for participants’ health [5.5]. The organizer has optimized the marathon route by avoiding certain narrow street canyons since 2015.

Partly related to Loo’s contribution to the wider community, she has been conferred the Fellow of FAcSS, UK in October 2019 [5.6]. Through the Road Safety Research Council, her research has improved traffic management locally and regionally. First, the support letter from the Transport Department evinced her important role in road safety measures optimization, such as the Autotoll and Alberta roundabout markings [5.7]. Second, in 2017, the Seventh Maoming Municipal Committee of the Chinese People’s Political Consultative Conference adopted recommendations from a study of Loo’s team in Maoming, a city of nearly six million people. After they revealed removing vehicular countdown devices could reduce fatal traffic crashes, the devices were uninstalled at major road junctions where rear-head collisions were common [5.8].

Lastly, Lai and Loo have led Knowledge Exchange projects for a safe and walkable city. Lai has organized two Community Forums on elderly road safety in Yau Tsim Mong District and Loo promotes cycling safety through a training programme for adolescents [5.9, 5.9.1]. Loo has partnered with leading medical practitioners from the Princess Margaret Hospital, the Community for Road Safety and the District Council to address road safety problems and benefits in Kwai Tsing District [5.10]. Their partnership formed part of the submission for the designation of Kwai Tsing as a World Health Organization-designated local safe community, and won “The Most Outstanding Community Partnership Award” in 2011.

## **(5) Sources to corroborate the impact**

### [5.1] Documents in relation to Walkability:

[5.1.1] Legislative Council Brief on Facilitating Provision of Pedestrian Links by the Private Sector

[5.1.2] Press Releases in relation to the General Evaluation Mechanism, The Development Bureau, Hong Kong SAR Government (in the period of April 2017 to April 2019):

[https://www.devb.gov.hk/en/publications\\_and\\_press\\_releases/press/index\\_id\\_9485.html](https://www.devb.gov.hk/en/publications_and_press_releases/press/index_id_9485.html);

[https://www.devb.gov.hk/en/publications\\_and\\_press\\_releases/press/index\\_id\\_9566.html](https://www.devb.gov.hk/en/publications_and_press_releases/press/index_id_9566.html);

[https://www.devb.gov.hk/en/publications\\_and\\_press\\_releases/press/index\\_id\\_10002.html](https://www.devb.gov.hk/en/publications_and_press_releases/press/index_id_10002.html);

[https://www.devb.gov.hk/en/publications\\_and\\_press\\_releases/press/index\\_id\\_10224.html](https://www.devb.gov.hk/en/publications_and_press_releases/press/index_id_10224.html); and

[https://www.devb.gov.hk/en/publications\\_and\\_press\\_releases/press/index\\_id\\_10360.html](https://www.devb.gov.hk/en/publications_and_press_releases/press/index_id_10360.html)

[5.1.3] Impact Case Support Letter from the Development Bureau

[5.1.4] Outstanding Transportation Project Award 2019 from the Eastern Asia Society for Transportation Studies (EASTS)

### [5.2] Report on Study of Road Traffic Congestion in Hong Kong (Membership List of the Transport Advisory Committee on Annex 1Aii)

### [5.3] Documents in relation to the Road Safety Strategy:

[5.3.1] Impact Case Support Letter from the Hong Kong Police Force

[5.3.2] Loo, B. P. Y., Hung, W. T., Lo, H. K., & Wong, S. C. (2005). Road safety strategies: a comparative framework and case studies. *Transport Reviews*, 25(5), 613-639. DOI:

10.1080/01441640500115892

[5.3.3] Loo, B. P. Y., Wong, S. C., Hung, W. T., & Lo, H. K. (2007). A review of the road safety strategy in Hong Kong. *Journal of Advanced Transportation*, 41(1), 3-37. DOI:

10.1002/atr.5670410103

[5.3.4] Loo, B. P. Y. and Siiba, A. (2018). Active transport in Africa and beyond: towards a strategic framework. *Transport Reviews*, 39(2), 181-203. DOI: 10.1080/01441647.2018.1442889

[5.3.5] Road Safety Council's weblink at: [http://www.roadsafety.gov.hk/en/about\\_us/index.html](http://www.roadsafety.gov.hk/en/about_us/index.html)

### [5.4] Science for Environment Policy, European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol

[5.4.1] Research Brief – April 2016: Physical Activity in Urban Areas

### [5.5] Wong, P., Lai, P. C., & Hart, M. (2013). Microclimate variations between semienclosed and open sections of a marathon route. *Advances in Meteorology*, Vol 2013, Article ID 287934

### [5.6] Award Letter of the Fellow of the Academy of Social Sciences, UK

### [5.7] Impact Case Support Letter from the Transport Department

### [5.8] Certificate from the Seventh Maoming Municipal Committee of the Chinese People's Political Consultative Conference

### [5.9] Knowledge Exchange Funding Exercise 2015/16: Summary of Impact Projects

[5.9.1] Community Forum on Promoting a Safe and Walkable City for the Elderly

### [5.10] Documents to support WHO-safe community:

[5.10.1] Loo, B. P. Y., Chow, C. B., Leung, M., Kwong, T. H. J., Lai, S. F. A., & Chau, Y. H. (2013). Multidisciplinary efforts toward sustained road safety benefits: Integrating place-based and people-based safety analyses. *Injury Prevention*, 19(1), 58-63

[5.10.2] Award Letter from the Food and Health Bureau on The Most Outstanding Community Partnership Award at the Health Promotion Symposium 2011

[5.10.3] Press Release on the Health Promotion Symposium 2011 at:

[https://www.info.gov.hk/gia/general/201111/18/P201111180199\\_print.htm](https://www.info.gov.hk/gia/general/201111/18/P201111180199_print.htm)