



Singapore-MIT Alliance for Research and Technology

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Immediate release

News Release

Dockless bike-sharing findings by SMART could boost usage, reduce urban and visual pollution *- First-ever research based on real dataset, on usage of dockless bike-sharing in Singapore*

1. Singapore - While the Singapore government has just mandated the sharing of data by the dockless bike-sharing companies, the Singapore-MIT Alliance for Research and Technology (SMART) [新加坡-麻省理工学院研究中心] has already published the world's first research paper - "[Understanding the usage of dockless bike sharing in Singapore](#)" - in the International Journal of Sustainable Transportation in February 2018.
2. Leveraging a new analysis method developed by the SMART Future Urban Mobility (FM) Interdisciplinary Research Group (IRG), the researchers made several findings which could help Singapore find an equilibrium between demand and supply of such bicycles, given that the fleet size is now no longer constrained by the capacity of the docking stations. The study explored the impact of the following on the usage of dockless bikes:
 - * Bike fleet size,
 - * Surrounding built environment,
 - * Access to public transportation,
 - * Bicycle infrastructure, and
 - * Weather conditions

The conclusions, which may offer some guidance to urban planners, policy makers and transportation practitioners, included:

- a. Bike usage rate is lower. Each bicycle is used less than twice per day on average.
 - b. Usage of dockless bikes was higher in the evening (after 5pm) than the morning peak, thereby causing a rebalancing issue to fleet management.
 - c. Weather plays a key role in determining usage. Given Singapore's frequent rainy weather or scorching heat, greater infrastructure support (e.g. built covered walkway) is needed to promote bike utilisation lest too many bikes remain idle, affecting bike operators' bottomline. This is especially so given that the rain also promotes faster degradation of the bicycles.
 - d. Supply is much higher in public property areas (HDB flats) versus private residential.
 - e. High bike usage observed near MRT station and bus stops, meaning dockless bikes are heavily used for last-mile trips.
3. SMART FM Postdoctoral Associate, Dr Zhang Xiaohu, said: "This work pioneers the study of dockless bike-sharing programmes based on real-time GPS data. It highlights the diminishing returns as the fleet size gets larger beyond a certain point at specific areas. Regulating fleet size is certainly needed for the effective management of urban public space as the oversupply of bikes may hurt the operators' economic sustainability and cause urban and visual pollution."

4. SMART FM Principal Investigator, Prof Zhao Jinhua, added: "In contrast to Singapore's otherwise premium transportation system, its cycling infrastructure is lacking. To be at the forefront of sustainable transportation, Singapore needs to substantially expand pedestrian and bicycle paths, enable deeper integration with public transportation and cultivate a culture of active travel."
5. This research was funded by the National Research Foundation Singapore under its Campus for Research Excellence and Technological Enterprise ([CREATE](#)) programme.

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About Singapore-MIT Alliance for Research and Technology (SMART)

[新加坡-麻省理工学院科研中心]

Singapore-MIT Alliance for Research and Technology (SMART) is a major research enterprise established by the Massachusetts Institute of Technology (MIT) in partnership with the National Research Foundation of Singapore (NRF) since 2007. It is the first entity in the Campus for Research Excellence and Technological Enterprise (CREATE) developed by NRF.

SMART serves as an intellectual hub for research interactions between MIT and Singapore. Cutting-edge research projects in areas of interest to both Singapore and MIT are undertaken at SMART. SMART comprises an Innovation Centre and five Interdisciplinary Research Groups (IRGs): Antimicrobial Resistance (AMR), BioSystems and Micromechanics (BioSyM), Disruptive & Sustainable Technologies for Agricultural Precision (DiSTAP), Future Urban Mobility (FM) and Low Energy Electronic Systems (LEES).

For more information, please visit - <http://smart.mit.edu>

For media enquiries, please contact:

Ms Pauline Teo Corporate Communications Manager SMART pauline@smart.mit.edu
