



# Going Small

The transition to urban micromobility

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# Transition to Urban Micromobility

We live in an increasingly connected world. The ways in which we live work and play is highly influenced by interaction with others, use of technology and sharing of spaces and resources.

Transit in cities is also experiencing a shift towards shared mobility: ride hailing, carpooling and short-term car lease have all experienced a rapid rise in urban areas worldwide.

This trend of small single-person flexible modes of transport termed as micromobility includes: mopeds, bicycles and scooters, electric or manual, docked or dockless. In just a few years they have experienced rapid growth, often without prior engagement with cities, leading to regulatory and operational challenges.

We examined the models and interrelationships which exist between micromobility operators, users and cities where they are located. We assessed the emergence of various models of regulation and operation as micromobility has spread to cities across the world, and identified characteristics of successful ventures as well as insights that could be applied to future operations.

## Definition

Use of small scale devices (e-bikes, e-scooters and mopeds) to address key mobility gaps within our transportation network (walking/cycling, public transport and driving).

## Background

The rise of micromobility stems from the following:

- Emerging trends in the everyday lives of urban area residents are impacting their mobility patterns and needs.
- Circular economy growth encourages more travelers to share ride or carpool.
- Increased access to information via smart phones, rise of digitalization and technology advancements.
- Flexible workplaces can help smooth the daily traffic flow and increase demand for hours traditionally seen as off-peak.
- Rise of new transport modes and increased demand for short trips to city centre.

## Key Client Questions/Findings

Operators are deployed in cities without notice due to rapid initial growth and rising investment capital. Deployment in cities also improves the rides per unit ratio, which ensures a sustainable business model.

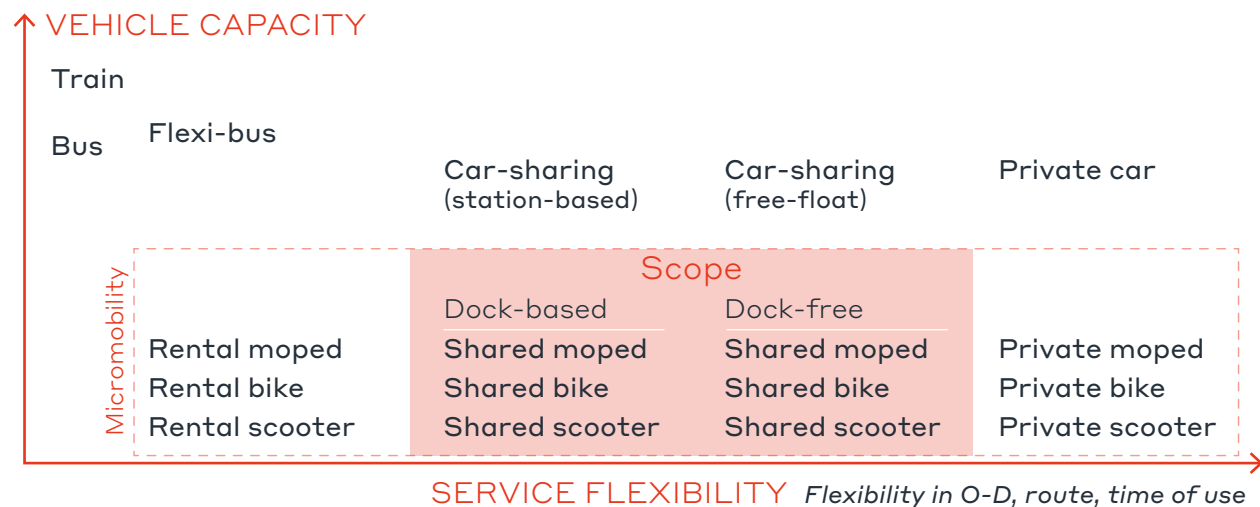
Price per kilometre is higher compared to traditional public transport and targets a specific demographic, typically from higher-income areas.

There is no evidence deployment is linked to neighborhoods' income. Deployment primarily occurs in central areas due to higher public density. Smaller operators may focus on more regional areas as to complement transport in non-centred areas.

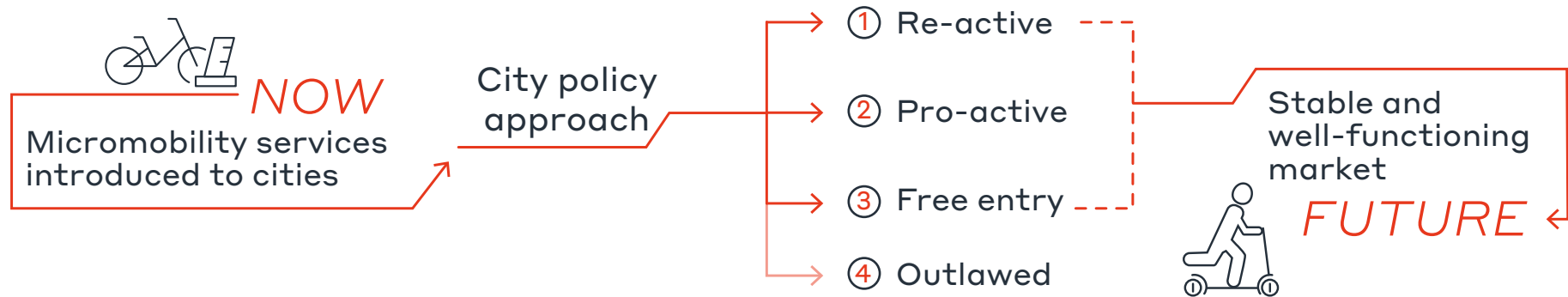
Cooperation and joint planning prevail as operators and cities collaborate on deploying and developing infrastructure/policy to manage micromobility.

Future ready cities have advantages: they have long-term transport plans and a strong nexus to complement the micromobility technology.

## Capacity Flexibility



# Transition to Urban Micromobility



Around the globe the approach to policy and regulation on micromobility can be classified into four (4) categories:

## ① Pro-Active:

Regulations imposed before technology implementation in the city.

## ② Re-Active:

Regulations imposed after technology implementation in the city and incidents occurred (i.e. user injuries, complaints from residents/commuters).

## ③ Free Entry:

Technology implemented without any regulations in place.

## ④ Outlawed:

Technology implementation is banned by the city.

A “pro-active” approach is the preferred option in which cities, local regulators and operators collaborate to put appropriate policy and regulation in place. “Free entry” ultimately results in “re-active” measures following negative attention. A complete micromobility ban (“outlawed”) is not suitable either as this can discourage innovation and lessen the intermodality potential.

# Key Challenges for our Cities



As a result of the arrival of micromobility services, the various aspects of traffic safety have been a primary focus of policy makers. Traffic safety challenges are a common concern for cities.

## Traffic Safety

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Parking and littering issues might become one of the key challenges to arise from the micromobility services emergence. As micromobility vehicles are a new feature in the urban landscape and transportation system, objections are raised in regard to their negative impact on cities due to littering and reckless parking.



## Parking and Littering

2



## Unseized Intermodality Potential

Integration of micromobility services to existing transport modes remains a key challenge and a key opportunity. A WSP study on unseized opportunity suggests the use of micromobility services to solve last mile issues in existing transportation systems.

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## Policy & Regulations

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## Unclear Policy



The policy and regulations around micromobility services remain a key challenge for policy-makers around the world due to the aggressive growth approach. As a result, unclear policies have a direct impact on the user response.

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## Biased Negative Public Opinion

As history has shown, the public tend to view new features introduced in our transportation systems more negatively than other transport modes. This can lead to irrational opinion. For instance, a micromobility related accident can be perceived as worse than a car accident.

## Vehicle Life Cycle



The growing supply of electric scooters can support governments in meeting the zero-emission vehicles adoption standards. However, quantifiable objections are raised regarding the life cycle of these vehicles. Could their contribution to sustainable urban transports be jeopardized by their short life cycles?

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# Policy Approach – Seven Cities



## Auckland

The Lime e-scooter operator was the first micromobility entrant in Auckland back in October 2018. Other operators now include Wave, Flamingo and Onzo, who are taking part in the second phase of the e-scooter assessment trial, which is ending in October 2019. In the first phase trial, safety and appropriate regulation were major concerns. There were 155 random braking events reported across New Zealand, as a result of a glitch in the e-scooter technology which caused the wheels to lock during use. For the second phase, a 15 km/h speed limit will be imposed and geofencing GPS technology will identify e-scooters parked outside of designated areas. Non-compliant e-scooters will need to be removed within three hours or be fined. All e-scooter riders must be 18+ years old and possess a valid driver's licence. Helmet use is optional.



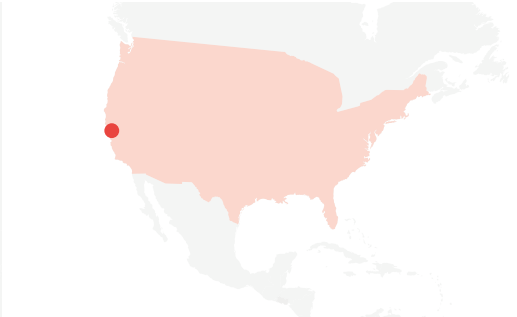
## Dubai

Micromobility has been available in the region since 2013, with 85 rentals spots in Downtown Dubai, the Dubai Marina and the Palm Jumeirah. However, the integration was intended for casual use around parks and tourist areas. E-scooters were introduced into the market in early 2019 with global brands such as Qwickly and KIWI implementing dockless scooter options. In March 2019, the Roads and Transport Authority (RTA) “outlawed” rental of e-scooters, stating, “The RTA is currently considering the technical and legislative requirements to allow the operation of electric scooters in addition to the conditions and commitment of scooter drivers.” The RTA position only applies to the rental of e-scooters and does not extend to the purchase of the equipment for personal use. E-scooters can also be used in closed areas or if permitted, within certain parks / campuses. It is generally agreed that suitable legislation is required for safety and usage of the equipment, prior to services being reintroduced. Requirements are currently under study by the RTA.



## London

There are 32 local authority districts in Greater London, each governed by a London borough council. This situation can be a hurdle for widespread rollout of micromobility across the city. Most new entrants have elected to pursue pilot operations with one or two boroughs, before scaling up. The launch of Mobike as a shared bicycle service coincided with TfL's Code of Conduct for dockless bicycle operators. This demonstrates a “Pro-Active” response from the city to put regulations in place before widespread use. A similar approach is being followed with e-scooters, with the UK government currently banning their use until appropriate operating regulations are developed.



## San Francisco

San Francisco has followed a “Pro-active” approach as one of the first US cities to develop regulatory and permit frameworks to cover the rapidly emerging micromobility and shared bicycle options in the city. Back in January 2018, JUMP launched operation of 250 e-bikes as part of an 18-month trial program. At the time JUMP was the only company able to meet San Francisco's priorities for a safe, equitable and accountable shared bicycle service. Currently, JUMP bicycles cover the core area of San Francisco, along with some key communities defined as “disadvantaged communities in the city”. The San Francisco Municipal Transport Agency is in the process of expanding the Stationless Bikeshare Permit citywide to between 10,000 and 11,000 shared bicycles and e-bikes.



## Singapore

There are currently numerous micromobility operators available in Singapore: e-scooter companies Lime, Neuron Mobility, Telepod and PopScoot as well as shared bicycle operators MoBike, Ofo Bike, Anywheel and Moov. The “Re-active” approach to regulations was a source of opposition, notably regarding the dockless devices. There as been several reported incidents of speeding and people abandoning these devices recklessly causing damage and limiting the number of devices available to customers. Singapore is implementing several regulations to help control safety and the uptake of micromobility, such as speed limits and designated parking areas. As of July 1, 2019, it will be a serious offence to ride an unlicensed micromobility device. Singapore will also limit the fleet size of operators under licences.



## Stockholm

Stockholm adopted a “Re-active” approach. During the last year, several operators have entered the market. The city is now facing several challenges implementing policy and regulation. Rapid uptake of micromobility devices and lagging regulation has contributed to several accidents including one user fatality. As a result of public concerns, Stockholm has signed a letter of intent (not legally binding) with several micromobility operators. The intent is to ensure regulations (prohibited parking, operating zones, speed limits on several streets) are aligned with the interests of the city. Furthermore, the City of Stockholm has awarded a 400 million SEK contract to the Swedish mobility company VOI to operate the city’s rental bicycle service. Over 7,500 new bicycles are set to be introduced, thus demonstrating a collaborative approach with these operators.



## Toronto

The Toronto Bike Share network has 360 docking stations, over 3,750 bicycles and is used in over 2 million passenger trips each year. However, all other micromobility operators are currently “outlawed” by the City of Toronto. To justify its decision, the city expressed concerns regarding public safety, parking, littering and the operators’ integration to the existing cycling infrastructure. E-scooter operators Lime and BIRD are attempting to work with the City of Toronto and get proactive legislation in place. Lime has piloted its e-scooter service in the nearby university-centric city of Waterloo, ON with the goal of establishing trust before expanding to Toronto and other Canadian cities

# Operator Approach – Seven Operators



## **Bird** - *Santa Monica*

Bird is one of the largest e-scooter operators. It started in Santa Monica in 2017, where it now owns 1,500 units, the initial cap set by the city. The competition between e-scooter company is fierce, which has led to various collaboration initiatives. Bird offers free helmets to all its riders and introduced the Save our Sidewalks pledge to encourage users to park responsibly.



## **Circ** - *Abu Dhabi*

Circ was the first company to offer e-scooter services in Abu Dhabi in July 2019. As part of a trial period, e-scooter could be used in a small area, mostly within the CBD. Prices are competitive to taxis. The trial's objective is to investigate demand and determine expansion requirements.



## **Cityscoot** - *Paris*

Cityscoot has been providing Parisians with an electric moped sharing service at a pay-per-minute rate since 2016. The absence of subscription fees makes Cityscoot an attractive first/last-mile solution. The service also covers districts farther from the centre. Growth has been constant. Its 3,500 vehicles have been used more than 4.5 million times.



## **Jump** - *San Francisco*

JUMP launched with a trial in San Francisco in January 2018 and was later acquired by the transportation network company Uber, expanding in 28 cities. It has since deployed 500 dockless e-bikes. They can be hired at highly competitive prices and JUMP offers a Boost plan for low-income riders. San Francisco is expanding its permit process for shared bicycle.





### Lime - Auckland

Lime joined Auckland's e-scooter trial in October 2018. In May 2019, Lime was chosen as one of the three operators to proceed to phase 2, which will include 1,875 scooters. Lime has applied for operating in the outer suburbs as well. Initial trial findings showed that approximately half of the citizens see e-scooters as a positive innovation.



### Mobike - London

Mobike is a dockless bicycle operator, active in central London and its western suburb, Ealing, since September 2017. Rides lasting less than 20 minutes are cheaper than public transport. Monthly passes can be purchased. Transport for London operates a public shared bicycle service that Mobike is geographically complementary to.



### U-Bicycle - Vancouver

U-Bicycle has been operating 500 non-electric bicycles in Vancouver and Victoria since October 2017. A virtual drop zone system is used instead of physical stations. The pricing scheme is very competitive and the service locations are complementary to the existing public shared bicycle system. The Richmond and Victoria municipalities have reacted positively to the operator and the City of Vancouver has positioned cycling as a key objective in its Transportation Plan 2040.

## Key Insights

Operators tend to appear without notice in their first city and rely on lobbying to access their next deployment locations. Initial growth is very fast, as the investment capital rises quickly in the early stages of operations and fixed costs are low.

Micromobility modes and especially e-scooters are usually priced higher per kilometre than public transport. However, in the early stages, the novelty factor may compensate for the price difference.

Deployment has not shown to be correlated with neighborhoods' income, despite initial launch taking place in central areas. Initiatives that improve equity, a key concern for city officials, have been taken in some cases.

After operators have been active in a city for a period, they usually develop a cooperative spirit and start planning with the authorities, which helps ensure their long-term acceptance. Improving the company's public perception from a disruptor to a collaborator is critical for an operator's future. Traffic safety and environmental issues can be top issues in this matter.

Finally, the city itself and whether it is future ready plays an important role as well. Provided the infrastructure and legal framework are in place, operators that are communicative and align their activity with the city's goals can become a part of the urban transport system.

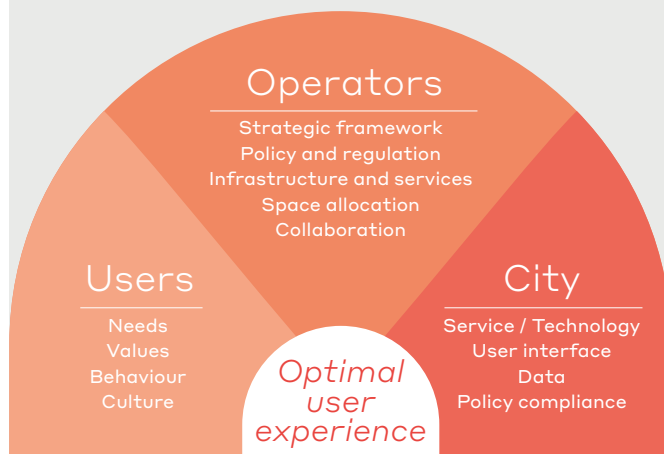
# User Change Response Behaviour

As operators and cities make an effort to create the best conditions for use, the development and growth of urban micromobility as mode of transport certainly relies on the main stakeholder – users. How do users then respond to this relatively new mode of transport in our cities?

WSP has identified key human behaviour change response and insights to consider for long-term feasibility of micromobility in our cities.

## Key Findings Users

Creating an environment that provides the optimal user experience relies on the interaction between the micromobility service operators, the city and users as illustrated below:



## Incentivizing Social Rules

What are the social rules around shared path use and good behaviour (i.e. parking, overtaking behaviours)? Given the minimal rules of use, does this lead to less different acceptable “use practices” that emerge in different places? What is the longer-term effect of these? Could positive behaviours be incentivized back to users? The idea being that a self-governed approach focused on consideration of other users may lead to positive behaviour change, as opposed to a rule-governed approach.

## Cost Model Incentivizes Maximum Speed

Currently, most models motivate faster travelling behaviour, rather than travelling to the conditions. Some consideration of a distance-time interaction in the model may lead to improved behaviours.

## Does Micromobility Lead to Inequities in Transport Provision?

Are older, physically disabled, parents with strollers and other people with reduced mobility less inclined to use them? Policy-makers need to make sure that provision of these modes does not result in other modes becoming less economically viable and being removed and therefore creating more gaps in provision.

## How Will We Allocate Space in the Future to the Different Modes?

Particularly given that there will be new and emerging transport modes that we have not yet considered? Can we engage with the micromobility providers in developing streetscapes?

## Use of Data to Improve Levels of Service for Vulnerable Users

High usage and few near misses indicate a good level of service of path for people with physical disability, older path users, and those carrying loads or pushing strollers. Equally, gaps in the data (no-use zones) could indicate a low level of service or areas of severance.

## Future Transport Mode Only for the Young?

The next generation of users are travelling differently (with a lower motivation to be reliant on the car) and demand greater mobility choice. Micromobility offers new choices, even looking at the subtle differences between bicycle and e-bike use in relation to trip purpose and motivation. Younger age groups are more likely users of micro-mobility services, such as e-scooters, and more willing to try new smart mobility technology as it appears in the market. Older age groups are more likely to state they will never use this technology.

## Does Micro-mobility Encourage Greater Social Interaction and Help to Reduce Social Isolation?

Anecdotal evidence suggests that when people are riding micromobility devices in mixed-use areas there is a greater degree of interaction with other users, driven in part by safety concerns, but also as people often enjoy using them. What are any other social benefits and dis-benefits?

## Including of Social Sustainability Framework

Do we require regulation to ensure transport equity for those who do not own a smartphone or credit card? Do cities need to ensure that placement meets the needs of users in economically deprived areas?

# Key Insights



## Digital Maturity in Our Cities Enables Long-term Consumer Behaviour

The electric scooter market size is expected to reach USD 42 billion in 2030. Risk capital has flocked around the micromobility start-ups in recent years and few people deny the market consensus – the increase of micromobility services will rewrite our approach to urban last-mile trips. On-demand micromobility rental services accelerates the growth of the e-scooter owners market subsequently fuelling the paradigm shift of last-mile trips.

## Urban Planners to Adapt – A New Feature in the Urban Landscape

Policy makers and regulators need to adapt – urban and transport planners as well as the micromobility services has become a new feature of our urban landscapes. Do our urban and transport planners need to consider micromobility in their thinking?

## Reaching the Plateau of Innovation by Competition

Cities can benefit from the competition that drives last-mile innovation. Hence, an outlawing-scenario would therefore not contribute to innovation in the city. As well, regulated markets could have a macroeconomic impact creating jobs and synergies with established companies.

## Data Sharing - A Key Driver for Well-founded Decisions

The introduction of micromobility services to our cities has created a formation of asymmetric information between policy makers and operators. Policy makers are lacking information in order to make well-founded decisions. Best practice examples have indicated that data sharing will enable policy makers to make decisions based on empirical data to really understand the impact of micromobility services before developing policies.

## Transparency in Mitigation of Carbon and Life Cycle of Scooters

While the growing supply of electric scooters are supporting governments in meeting the standards for the adoption of zero-emission vehicles, quantifiable objections are raised against the sustainability of these vehicles (life cycle). In order to keep the discussion around the environmental impact stringent, the life cycle of electric scooters should be transparent and showcased by the operators in order to avoid criticism for disadvantageous contribution to environmental sustainability. By doing this, operators incentivize residents' consumers and regional governments to mitigate greenhouse gas emissions. Further, valuable input to the discussion would be for cities to investigate which trips that are being replaced and how to focus resources to replace trips with higher greenhouse gas emissions.

## Partnering Up in Order to Reach Forefront of Urban Movement

As our thinking of urban movement is changing, operators and cities need to collaborate in order to reach the most optimal synergies for users. The right balance must be struck between the city and operators for appropriate policy and regulation to phase in micromobility. The alternative approach would be that cities and operators work on their own towards the same vision.

## Policy and Regulation Key Insights

Policy/regulatory aspects which have been favourable to the development of micromobility, while keeping safety and the best interests of the public in check, include the following:

- Imposed speed limits (reduced speed in high traffic areas)
- Data sharing incentive structure to integrate and optimize services with existing transit
- Minimum age requirement
- Geo-fencing operations and designated parking zones
- Operating permit & capacity cap (number of e-scooters/bikes allowed to operate)
- Development of life cycle related KPIs to ensure sustainability of fleet

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