Micromobility - Emerging Urban Transport Trends

ELEVATE - Our new micromobility project: https://gow.epsrc.ukri.org/NGBOViewGrant.aspx?GrantRef=EP/S030700/1

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Technology, Innovation & Society Group
“will continue to transform how people travel, goods are delivered, streets are designed, and cities evolve.”

(Shaheen & Cohen, 2019)
What is Micromobility?

- Station-based Bikesharing
- Dockless Bikesharing
- Micro e-cars
- E-Skateboards
- Standing Electric Scooter Sharing
- Moped-style Scooter Sharing
- Cargo e-bikes
- Monowheels
- Etc...
Classifications

- Definitions, classifications and regulatory frameworks for micromobility vary across the world (e.g. EU L categories)
- A range of micro-vehicles – such as standing e-scooters, e-skateboards and self-balancing vehicles – is often excluded, or classified as toys
### Proposed Definition

<table>
<thead>
<tr>
<th>Type A</th>
<th>Type B</th>
<th>Type C</th>
<th>Type D</th>
</tr>
</thead>
<tbody>
<tr>
<td>unpowered or powered up to 25 km/h (16 mph)</td>
<td>powered with top speed between 25-45 km/h (16-28 mph)</td>
<td>&lt;35 kg (77 lb)</td>
<td>35 – 350 kg (77 – 770 lb)</td>
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</tbody>
</table>

**Type A: Under 35kg**, power supply (if any) is gradually reduced and cut off at a given speed limit, no higher than **25 km/h**

Overall: Devices/vehicles weighing up to 350 kg and whose power supply (if any) is gradually reduced and cut off at a given speed limit, no higher than **45 km/h**. Types A-D

Includes exclusively human-powered, e.g. bicycles, skateboards, scooters.

Note: account for variation of physical activity: public health

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(OECD/ITF, 2020)

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E-bike/scooter max. assisted speed: 25 km/hour

Traffic speed London: 11km/h
Benefits?

- Reduce congestion
- Less vehicle miles travelled
- Reduce emissions/improve air quality
- Mobility access for underserved populations
- Access to public transport (first/last-mile)
- Convenient door-to-door transport
- Increase demand for safe cycle paths, facilitate construction

(OECD/ITF, 2020; Oeschger et al., 2020; Shaheen & Cohen, 2019)
Focus: shared e-scooters.

Mode shift?

- 8-48% shift from car
- 45–49% shift from walking/cycling
- Some competition between micromobility, walking and public transport necessary for people to transition towards a car-free urban mobility?

(Zagorskas & Burinskiene, 2020; OECD/ITF, 2020)
Environmental impact: Shared e-scooters

- “When e-scooter usage replaces average personal automobile travel, we nearly universally realize a net reduction in environmental impacts”
- Scooter lifetime is key, but also redistribution

(Hollingsworth et al., 2019)
Who rides? Shared e-scooters

- Appeal to a broader demographic than cycling
- Some cities report reaching underserved populations, others young/male/higher income

-> Opportunities to reduce inequality

(OECD/ITF, 2020; Curl, Angela and Fitt, 2020)
Safety? E-scooters

- Traffic safety is improved by reducing the number of car and motorcycle trips in a city
- Road fatality not significantly more likely compared to bicycle
- Risk of emergency department visit similar to cyclists
- Two studies, however, found a higher risk of hospitalisation

(OECD/ITF, 2020)
Costs for cities?

- Shared micromobility can “support system change financially”
- Brisbane: 175,000 € /year fee for 1000 e-scooters
- Dallas: $1/day/scooter for investment in bike lanes

(Gössling, 2020:9)
Focus: E bikes

- Appeals to much broader range of users than conventional cycling
- At least ‘moderate intensity’ physical activity
- Our study showed 20% reduction in car milage

(Behrendt et al, 2015; Cairns et al, 2017)
Focus: Cargo e-bikes – private and freight

• Potential to replace 30% of urban transport trips
• +60% cargo bike sales in 2019 and +53% percent for 2020
• private and commercial grow equally fast

(Cairns and Sloman, 2019; http://cyclelogistics.eu/)
COVID impact

- Some schemes closed
- Some had major decrease
- Others had peak days
- Replacing public transport
- Some free, e.g. health workers

Individual

- E-bikes 2020: sales up 85% US, some companies up to 1000%
- E-bikes & scooters up 300% (Halfords, UK)
- Long waiting lists in many countries

Opportunities for (trying out) new modes and travel behaviours
Recommendations

- Provide clear and supportive regulations
- Allocate protected space for micromobility, traffic calming, keep pedestrians safe
- Focus on motor vehicles to make micromobility safe
- Define parking zones to avoid blocking of public space
- Collect data on micro-vehicle trips and crashes
- Proactively manage the safety performance of street networks (e.g. GPS)
- Include micromobility in training for road users
- Minimise kilometres by support vehicles
- Accessible public transport platforms and vehicles
- Collaboration PT transport planners and micromobility providers
- Provide training for diverse and disadvantaged groups
Consider Social Inclusion and Equity

- Equal access to all population groups
- Un- and Under-Banked Households (credits cards required?)
- Low-Income Affordability
- Digital Impoverishment (smartphone, data, literacy)
- Neighbourhood Service Availability
- Education and Outreach
- Access for People with Disabilities

(Shaheen & Cohen, 2019; Oeschger et al., 2020)
Data sharing (standardized/open) as condition for operating schemes to

- Understand micromobility impacts
- Identify gaps in transportation network
- Monitor equitable service standards
- Offer multimodal, real-time transportation information
- Evaluate policies

(Shaheen & Cohen, 2019; https://policydata.numo.global/)
What if…

(UK Parliament, 2019)
...half the car trips under 8km could be replaced with micromobility?
What if...public investment in micromobility was similar to electric cars?

- Subsidies for buying an electric car (Germany 6k€/car)
- Public investment in charging infrastructure (e.g. France 50 million €)
- 1 slow charger costs 2k€
- Where provided: subsidies for micromobility (esp. e-bikes) very popular and used quickly (e.g. 48 hours/Berlin, 3 weeks/Oslo)
- Electric Mobility = Micromobility (not just electric cars)

(Behrendt 2017; Cairns et al 2019)
Rapid City Action for Micromobility

• “Because these new services are no longer directly procured by local governments in most cases,
• cities have had to rapidly develop new permitting and licensing regulations
• to maximize and harness their positive transformative potential to increase access, safety and economic opportunity for all residents
• while also reducing congestion, vehicle miles travelled, carbon emissions” https://playbook.t4america.org/

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Key Policy Resources Shared Micromobility


https://policydata.numo.global/


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