Cycling City 2030

Bicycle infrastructure as an enabler of access for users of mobility aids, e-scooters, and delivery robots

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Personal Mobility / Micro Mobility Devices

Delivery Robot  Bicycle  Mobility Aid  e-Scooter
Trends for concern re: Future City 2030

Greenhouse gas emissions 2017 vs 1990

World: +65%
UK: -44%
UK Energy: -59%
UK Transport: -3%*

*Excludes International Aviation
Trends for concern re: Future City 2030 (II)

Global urban population

Today: 4.3bn

2030
Estimate: c. 5.2bn

Cars on road globally:

Today: c. 1.3bn

2040
Estimate: c. 2bn
Trends for concern re: Future City 2030 (III)

Global population aged over 60:

Today: 1.0bn

2030 Estimate: 1.4bn
Cycle paths as a solution

• 1) Personal mobility aids (PMAs)
• 2) Electric kick scooters
• 3) Delivery robots
Personal Mobility Aids (PMAs)

• Wheelchairs, Mobility Scooters, and other assistive devices
• >1m wheelchair users in UK now, likely over 2 million by 2050 due to ageing: most mobility impairments are function of age-related conditions
• c.500k power wheelchair and mobility scooters in UK, with rapid annual growth in sales of the latter
Study of PMA users

- Conducted research for MSc in 2014-15; large questionnaire of 223 wheelchair & mobility scooter users in the UK, Netherlands and Canada
- Dutch mobility scooters are more like bicycles: average reported top speed was 9.8mph, while UK devices go between 4 and 8mph.
- ~85% of Dutch PMA users travel on bike paths
Difficulty reaching the shops, using PMA only

Mean value = 4.20

UK

Mean value = 2.44

Netherlands
Barriers to mobility
Barriers encountered on trip to shops/the park/work

- Poor sidewalk surface
- Not enough dropped kerbs
- Sidewalk too narrow
- Cars parking on sidewalk
- Not enough pedestrian crossings
- Sidewalk obstructions (posts, bins, etc.)
- Sidewalk too crowded with people
- Fear of collision with cyclist on bike path

Percent PMA users reporting barrier

<table>
<thead>
<tr>
<th>Barrier</th>
<th>UK</th>
<th>Netherlands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor sidewalk surface</td>
<td>90</td>
<td>50</td>
</tr>
<tr>
<td>Not enough dropped kerbs</td>
<td>80</td>
<td>40</td>
</tr>
<tr>
<td>Sidewalk too narrow</td>
<td>60</td>
<td>30</td>
</tr>
<tr>
<td>Cars parking on sidewalk</td>
<td>50</td>
<td>30</td>
</tr>
<tr>
<td>Not enough pedestrian crossings</td>
<td>50</td>
<td>20</td>
</tr>
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<td>40</td>
<td>20</td>
</tr>
<tr>
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<td>30</td>
<td>10</td>
</tr>
<tr>
<td>Fear of collision with cyclist on bike path</td>
<td>20</td>
<td>10</td>
</tr>
</tbody>
</table>
The UK vs Dutch experience

• “[I prefer] the manual chair, as my husband drives the car and he can't get my electric chair in the boot, so he pushes me around town.” (Female, aged 65+, UK)

vs.

• “I can control how, where and when I want to go somewhere” (Female, aged 45-64, Netherlands, using mobility scooter)
Electric Kick Scooters (e-Scooters)

• ~25km/h top speed, ~30km range
• Part of a recent boom in shared mobility devices that started in 2017 in California, now widespread around the Americas, Europe, and Oceania
• Over $1bn funding raised by operators Lime and Bird since their launch

(Image courtesy Jun’ichi Miyazaki)
e-Scooters – Barriers and Infrastructure

• Small wheels and rider position make users more vulnerable than cyclists
• Poor road surface and drains pose particular hazard
• 25km/h too fast for the sidewalk!
• Cycle paths appear to offer good solution
• Legislators scrambling to catch up
• For more on e-Scooters, head to Session 2A after this!
Autonomous Delivery Robots

• First came about in 2014 with Starship’s robot (pictured)
• >$57m already invested in Starship and Marble, two of the first operators
• Other companies like Amazon, FedEx, Postmates, Ford and Toyota all releasing their own robots
Barriers / Infrastructure Utilisation

Photo: gdleung / flickr (cc)

Photo: Todd Mecklem / flickr (cc)
Typical UK urban ring-road
...could the future norm be more like this?
Considering the Future

• If small delivery robots become popular, would cycle paths need a “robot” / slow lane? Would design standards need to change?
• Delivery robots and other autonomous vehicles collect huge amount of data – why aren’t we using this?
• Bird offered to pay $1/scooter/day toward cycle paths – could a small fee per scooter/robot result in huge increase in cycle infrastructure?
Considering the Future

• How do we legislate for these devices? Cautious approach or liberal one?
• We’re at a turning point in mobility – do we legislate scooter/robot designs & speeds to suit current infra, or do we re-think the design of our cities?
• Is the term “Cycle Path” still apt, or should we re-name them “Mixed-Mobility Paths” or “Micro-Mobility Paths”? 
Thanks for attending!

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