Pedestrians and cyclists sharing facilities in Singapore

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Singapore

- Planning and provision for transport
- Shared spaces & users interaction
Planning & Spatial Characteristics
Planning & Spatial Characteristics

Urban planning framework

Concept Plan (40-50 years)
- Land & population

Master Plan (10-15 years)
- Land-use pattern & transport network

Detailed Plan (5-10 years)
- Near term developments
Transport planning & policies

- Expressway
- Major Arterial
- Minor Arterial
- MRT line/station
- Town

Liu, 2014
Active mobility planning & policies

Walking & cycling facilities are being expanded

Policies to increase road safety and trip comfort
<table>
<thead>
<tr>
<th>Mode/Type of Personal Mobility Device (PMD)</th>
<th>Paths [Speed limit 15km/h]</th>
<th>Cycling/Extended Paths [Speed limit 25km/h]</th>
<th>Roads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal mobility aid</td>
<td></td>
<td></td>
<td>☒</td>
</tr>
<tr>
<td>e.g. motorised wheelchairs</td>
<td></td>
<td></td>
<td>☒</td>
</tr>
<tr>
<td>Conventional bicycle</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>PMDs</td>
<td></td>
<td></td>
<td>☒</td>
</tr>
<tr>
<td>e.g. kick-scooter, hoverboards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric bicycle</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>
* To understand usage of cycling facilities

* To determine changes in travel behaviour
Infrastructure

Traditional paths

Extended paths
Infrastructure

Segregated paths

Demarcated (adjoining) paths
Sample characteristics

Age distribution (n=202)

3 every 4 households owned some type of bicycle.
1 every 2 respondents cycled in the towns under study.
Most commonly used mode of transport

<table>
<thead>
<tr>
<th>Mode</th>
<th>Survey (n=202)</th>
<th>National Rates*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td>54%</td>
<td>48%</td>
</tr>
<tr>
<td>Private</td>
<td>28%</td>
<td>13%</td>
</tr>
<tr>
<td>Walk</td>
<td>21%</td>
<td>22%</td>
</tr>
<tr>
<td>Cycle</td>
<td>10%</td>
<td>2%</td>
</tr>
<tr>
<td>PMDs</td>
<td>2%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Survey (n=202) vs National Rates*

**Meaning**: The chart above compares the most commonly used modes of transport according to a survey of 202 participants with national rates. The highest usage was for public transport, with 54% of the survey respondents and 48% nationally. Private transport followed, used by 28% of respondents compared to 13% nationally. Walking was the third most used, with 21% survey and 22% national rates. Cycling was the least used, with 10% survey and 2% national. PMDs were also least used, with 2% survey and 0% national.
Aware of the demarcated paths in the towns.

- 55%
More
→ Convenience

Same/less
→ Did not recognise the improvement
More cycling trips after enhancement of off-road facilities

(n=111)
Users interaction & shift-rate

- 37 trips
- 28 trips
- 4 trips
- 3 trips

Shift to

+ 22 new cycling trips
Shift-rate

Key factor to increase accurately forecast cycling trips

\[ b = \frac{\text{Reported cycling trips from bus}}{\text{Total cycling trips}} = \frac{28}{100} = 0.28 \]

\[ \text{Shift-rate} = \frac{b \times \text{Cycle}}{\text{Bus}} \]

*Cycle* = daily trips by bicycle (towns under study)

*Bus* = daily trips by bus (towns under study)
Sum-up

Organised planning → Infrastructure provision & policies

Increased & enhanced infrastructure

Reduced private transport & increased bicycles usage
Conclusions

• Examine and consider users interaction

• Characteristics & locations of paths
  • Make cycling a “competitive” mode of transport

• “Striking” characteristics to increase awareness
Thank you!

Questions?

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