Coloured Cycle Lane Research

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And
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European Cycle Lanes
Cycle Lane with Symbol Only
Cycle Lane – Coloured at Intersections or narrow spots only
DRAFT Auckland Regional Cycle Standards for Marking, Colouring and Signage
Driver’s Viewpoint

X = 5 m
Y = 55 m (safe stopping distance at 60 kph)
Z = 95 mm

If X = 20 m, Z increases to 300 mm
5 m Length of Green Bus Lane
5 m Length of Green Bus Lane at 20 m
5 m Length of Green Bus Lane at 40 m
5 m Length of Green Bus Lane at 55 m
Cycle Lane Research

Effect of colouring a cycle lane

Three stage survey
- No cycle lane
- Lane marking only
- Full green cycle lane

Photos to determine car and cycle placement in each scenario

Undertaken with assistance of Sandi Morris at Palmerston North City Council
Methodology
## Sample Size

<table>
<thead>
<tr>
<th></th>
<th>Car Only</th>
<th>Car + 1 Cycle</th>
<th>Car + 2 Cycle</th>
<th>1 Cycle</th>
<th>2+ Cycle</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Cycle Lane</td>
<td>73</td>
<td>15</td>
<td>4</td>
<td>39</td>
<td>9</td>
<td>140</td>
</tr>
<tr>
<td>Cycle Lane</td>
<td>92</td>
<td>14</td>
<td>3</td>
<td>29</td>
<td>4</td>
<td>142</td>
</tr>
<tr>
<td>Green Cycle Lane</td>
<td>187</td>
<td>6</td>
<td>1</td>
<td>11</td>
<td>3</td>
<td>208</td>
</tr>
</tbody>
</table>
No Cycle Lane

Variation in cycle behaviour
No Cycle Lane

Cars driving over the centre-line
Cycle Lane Marking

- Generally cyclists within cycle lane
- Cars no longer cross centre-line
- Perception that Cars drive slower (narrower lanes)
- Perception that Cars park closer to kerb
Distance between Cars and Cycle Lane

- No Cycle Lane
- Cycle Lane
- Green Lane

Distance between Cars and Cycle Lane
## Distance between Cars and Cycle Lane

<table>
<thead>
<tr>
<th></th>
<th>Car only</th>
<th>Car and cycle</th>
<th>Shift with cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>No cycle lane</td>
<td>0.60 m</td>
<td>0.88 m</td>
<td>0.24</td>
</tr>
<tr>
<td>Cycle lane</td>
<td>0.63 m</td>
<td>0.74 m</td>
<td>0.11</td>
</tr>
<tr>
<td>Green cycle lane</td>
<td>0.72 m</td>
<td>1.12 m</td>
<td>0.50</td>
</tr>
<tr>
<td>Difference with green</td>
<td>+0.09 m</td>
<td>+0.48 m</td>
<td>+14% +65%</td>
</tr>
</tbody>
</table>

Drivers appear to be more aware of cyclists when the lane is green.
Distance between Cycles and Kerb

Distance from Kerb - Cycles

- No Cycle Lane
- Cycle Lane
- Green Lane

Cycle Lane
Distance between Cycles and Kerb

- No cycle lanes: 1.90 m
- Cycle lane: 2.49 m (1/3 from edge of cycle lane)
- Green cycle lane: 2.81 m (mid way in cycle lane)

Green cycle lane increases distance between kerb and cycle by 32 cm

Do cyclists perceive they are safer on a green cycle lane?

Distance between cyclist and parked cars increased
Distance between Cars and Cycles

- No cycle lanes: 2.46 m
- Cycle lane: 1.74 m
- Green cycle lane: 2.01 m

With Green, distance between cars and cyclists increased by 25 cm or 15%

Data includes observations of BOTH cars and cycles in same frame
Summary

• Cyclists more uniform with cycle lane, whether green or not

• Green lane compared to marked lane:
  • increased distance between cars and cycles
  • drivers appear to be more aware of cyclists
  • cyclists appear to feel safer on green lanes

• BUT cost is an issue
Costs

- Cost varies with type of surfacing used
- Maintenance varies with
  - Traffic volume over cycle lane – eg intersections
  - Colour retention of product
  - Future roadworks
  - Laying conditions
Epoxy Glue Coloured Chipcoat

- **COST**  $65 / m²
- **MAINTENANCE**  resurface after 7 years

1 month after colour

18 months after colour
Coloured Thermoplastic

- **COST** $70 / m²
- **MAINTENANCE** resurface after 10 years

1 month after colour 18 months after colour
Modified Water Borne Emulsion

- **COST** $20 / m²
- **MAINTENANCE** resurface after 1-2 years

1 month after colour 18 months after colour

Shane Haligans Roadmarking Services 0274472873
## Cost Summary of Coloured Surfaces

<table>
<thead>
<tr>
<th>Surface Type</th>
<th>Initial Construction Cost</th>
<th>Lifespan</th>
<th>Cost over 20 years</th>
<th>Colour Retention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Borne Emulsion</td>
<td>$20 / m2</td>
<td>1-2 years</td>
<td>$200 / m2</td>
<td>Low</td>
</tr>
<tr>
<td>Epoxy Chipcoat</td>
<td>$65 / m2</td>
<td>7 years</td>
<td>$195 / m2</td>
<td>Medium</td>
</tr>
<tr>
<td>Thermoplastic</td>
<td>$70 / m2</td>
<td>10 years</td>
<td>$140 / m2</td>
<td>High</td>
</tr>
</tbody>
</table>
Possible Future Trial

Cycle Lane with Coloured Roadmarking