Cynemon - Cycling Network Model for London
Aled Davies – TfL Planning
Background

- Investment in cycling has increased significantly in recent years
- We need robust appraisal to justify cycling investment
- Solution: Cycling Demand Response (CYDER) framework

![Diagram of LTS, Cynemon, HAMs, and WebCAT]

**LTS**
- Multi-modal London-wide

**HAMs**
- Sub-Regional Highway

**Cynemon**
- Cyclist Route Choice and Demand Response

**WebCAT**
- Online Connectivity Mapping
Cynemon – **Cycling Network Model for London**

“New cycling model which estimates cyclist routes, journey times and flows at a strategic level across London for scheme and policy appraisal”

- Which are the busiest cycling corridors?
- What is the journey time between A and B?
- Which are the preferred routes between A and B?
- Where do cyclists using specific roads come from and go to?
- What is the strategic impact of cycling demand growth on cycle flows?
- What is the strategic impact of infrastructure on cycle flows and journey time?
How has it been developed?
Network built from many sources

ITN + Urban Paths network structure:

Additional attributes from:
- Tfl GIS Layers
- OpenStreetMap
- STRAVA
- Tfl App
Cycling demand estimated from a combination of traditional and new sources

Core
- LTDS
- Census JTW
- Cycle Hire OD

Additional
- TfL IRR OD
- Central London Termini OD

Validation
- Other OD surveys
- STRAVA
- TfL App
- Cycle counts
Data collection through online survey and mobile phone app to inform route choice algorithm

Observed routes were used to determine the value that cyclists place on:

- Road type
- Cycle infrastructure
- Bus lanes
- Traffic volumes
- Gradient
Around 2,500 counts used to calibrate the model
What insight can it offer?
Base year flows (all cyclists)

South-West prominence

Cycle Superhighways
Trips using Waterloo Bridge

Cynemon Flow (cyclists per hour) - 2014 - Trips Using Waterloo Bridge Northbound in the AM Peak

Model Run 004

RobinForrest
31/03/2016
Cynemon Outputs

• Cycle Flow

• Cycle Journey Times

• Routing

• Monetary Benefit
Cynemon Forecast Model
Key Features

- Model Base Year: 2014
- Future Years: 2021, 2031, 2041, (2026)
- Time periods:
  - AM Peak (08:00-09:00)
  - Inter Peak (Average hour 10:00-16:00)
  - PM Peak (17:00-18:00)
We have the following ‘standard’ forecast scenarios:

<table>
<thead>
<tr>
<th>Scenario Name</th>
<th>Year</th>
<th>Network</th>
<th>Demand</th>
<th>Potential Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference Case</td>
<td>2021, 2026, 2031, 2041</td>
<td>Committed and funded schemes</td>
<td>Future behaviour</td>
<td>MTS, scheme tests/appraisal</td>
</tr>
<tr>
<td>Target Case</td>
<td>2026</td>
<td>Committed and funded schemes</td>
<td>1.5m cycle stages</td>
<td>-</td>
</tr>
<tr>
<td>Strategic Case</td>
<td>2021, 2031, 2041</td>
<td>2022 Investment Plan</td>
<td>Future behaviour</td>
<td>Strategic Cycling Network Plan</td>
</tr>
</tbody>
</table>
Cynemon Demand Forecasting Process

1. Base Year Demand
   - Population/employment growth

2. Other modes forecast demand: Railplan & LoHAM

3. Switchable Trips

4. LTDS: % of potentially cyclable trips/journeys (borough level)
   - Current or future behaviour

5. Background growth
   - Scheme impact estimate (adapted from CYPET)
   - "Push" factors from highway and PT

6. Scheme impact

7. Push Factors
   - Current or future behaviour
   - "Push" factors from highway and PT

8. Unexplained Factors

9. Forecast Demand
   - Back-casting exercise
   - Other factors currently unexplained
Growth in Cycling due to Population & Employment
(Includes effect of changing age distribution)

More growth in east London
Growth in Cycling due to Scheme Response

A continuation of existing infrastructure with new ones will boost cycling growth

More growth occurs in areas with denser concentration of cycling infrastructure

2014 to 2026 Growth in Cycling

Due to Scheme:
- < 4
- 4 - 5
- 6 - 8
- 9 - 10
- 11 - 15
- 16 - 20
- 21 - 25
- 26 - 30
- 31 - 40
- 41 - 50
- 51 - 65
- 66 - 80
- 81 - 100
- 101 - 150
- 151 - 200
- 201 - 350
- 351 - 650
- 651 - 1000

2026 Ref Case Schemes
Existing Cycle Superhighways

EVERY JOURNEY MATTERS
Growth in Cycling due to Push Factors
(Includes fuel prices, fares and journey times by other modes)

Increased journey time for highway and PT will push people to cycle

2014 to 2026
Growth in Cycling

Due to Push Factors
- < 4
- 4 - 5
- 6 - 8
- 9 - 10
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- 16 - 20
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EVERY JOURNEY MATTERS
Growth in Cycling due to Unexplained Factors

The unexplained factors contribute about 35% of total growth.

There is a potential to unlock new cycling trips in the north and north-east area.

The distribution of new cycling trips is based on potentially cyclable trips, the propensity to cycle segment analysis, and current cycling trip length.

2014 to 2026
Growth in Cycling

Every Journey Matters
Next Steps
Next Steps

• Variety of scheme applications in TfL and externally
• Understanding insights provided by new forecasting approach
• Cynemon P2
Questions?

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