



Will AV ride-sharing make cities greener,
more efficient and more accessible?

Andrew Wescott, Head of Regulatory & External Affairs,
Addison Lee



Consortium of leading mobility organisations



Mobility services + commercial model



City perspective + customer/city research



Transport demand model



AV fleet + service simulation



Vehicle requirements



City compatibility + results validation

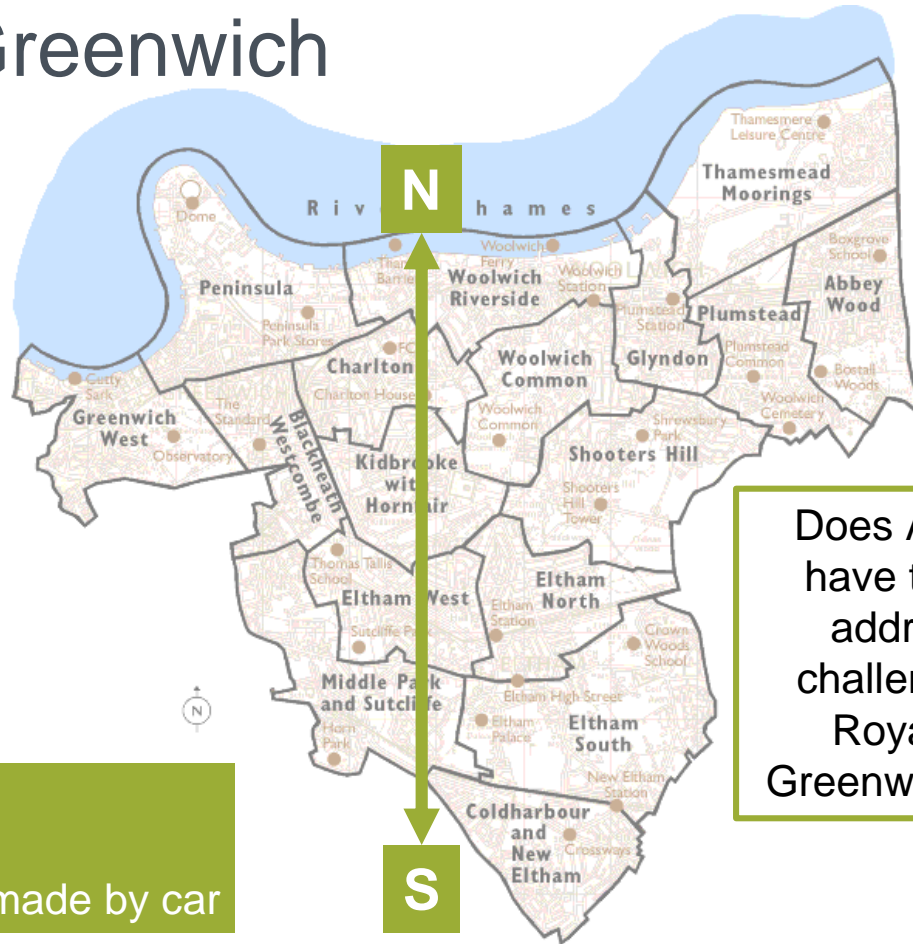


Innovate UK

Transport in Greenwich

- Higher density
- Lower car ownership
- Higher public transport access level (PTAL)
 - Underground stations, DLR, and other major network links

- Lower density
- Lower PTALs
- Higher proportion trips made by car



Does AV ride-sharing have the potential to address transport challenges facing the Royal Borough of Greenwich and beyond?

Greenwich Today



Tourism

20 million visitors per year



Thamesmead Regeneration

£1bn Peabody development project

20,000 new homes



Charlton Masterplan

302 hectare river facing site

MERGE Greenwich project mission:

Develop a blueprint and assess the impact of a scalable autonomous vehicle ride-sharing service, integrated with existing public transport.

Lots of unknowns

Will AV ride-sharing...

- Attract enough passengers?
- Cause more modal shift from cars or public transport?
- Be convenient enough?
- Be less expensive?
- Deliver social benefits?
- Be commercially viable?

Types of customer service



Minibus



Assist



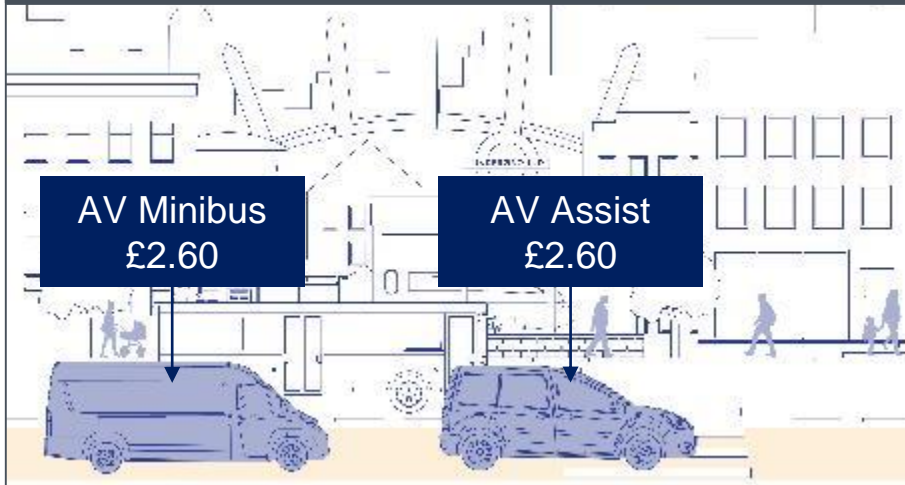
Standard



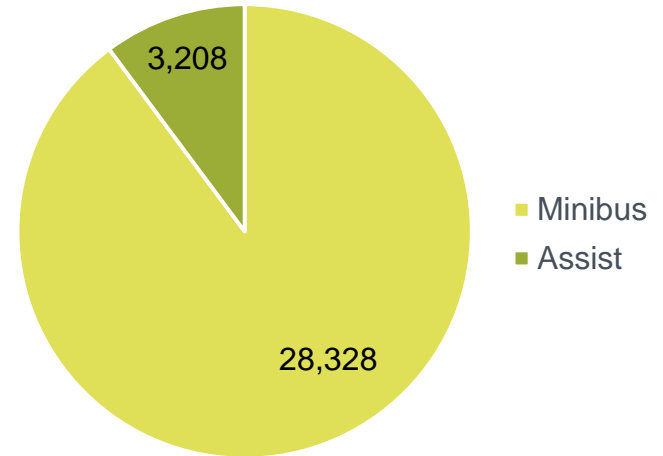
Executive

1) The Accessibility Blueprint: Low-cost transport for all

- Readily accessible
- Low-cost
- High sharing
- Medium convenience

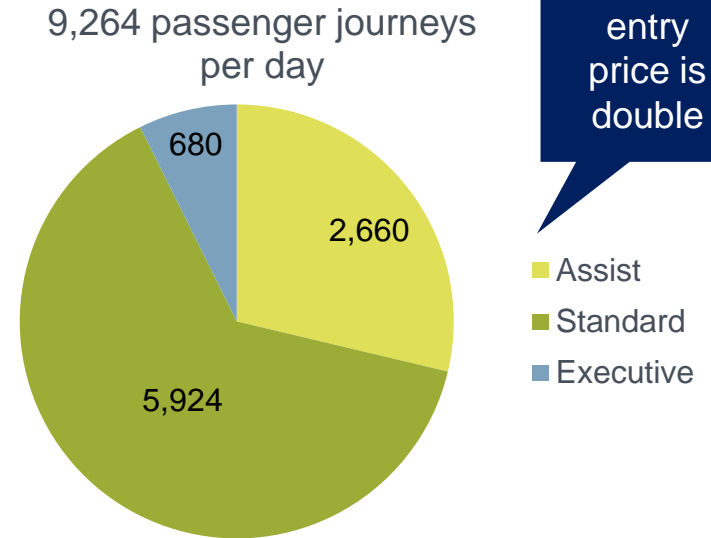
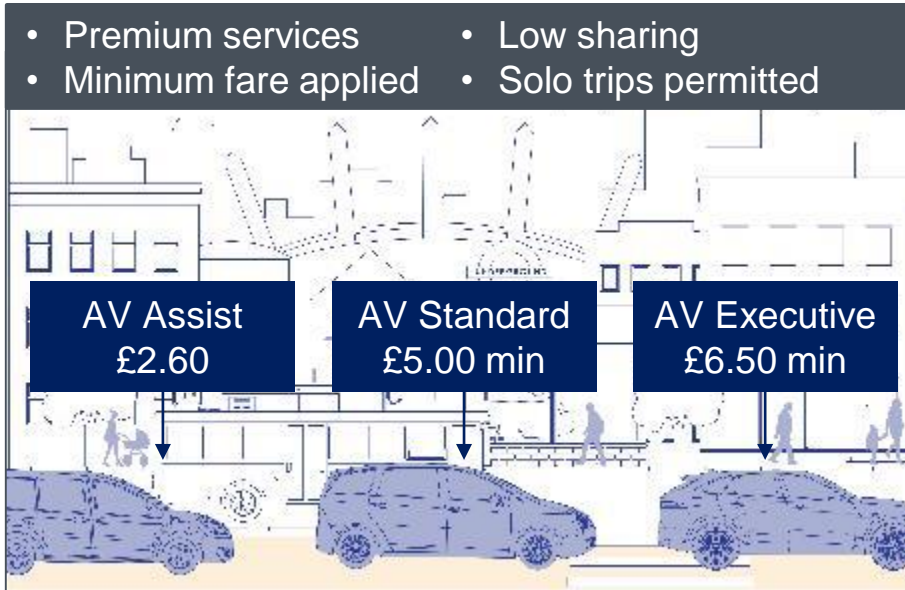


31,536 passenger journeys
per day

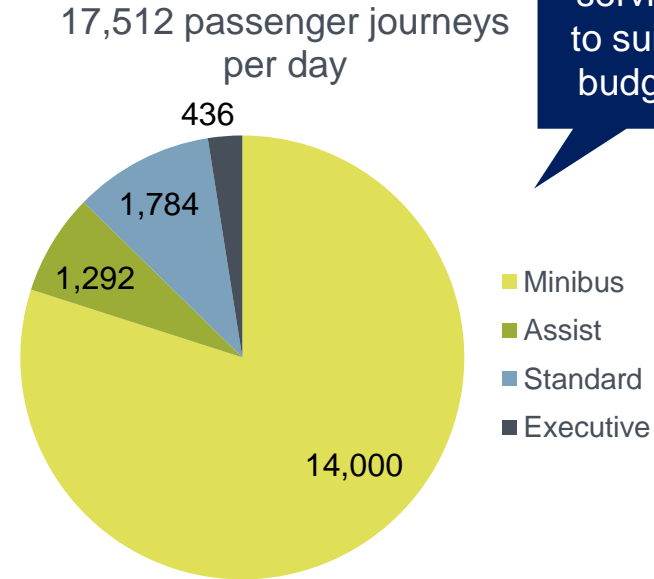
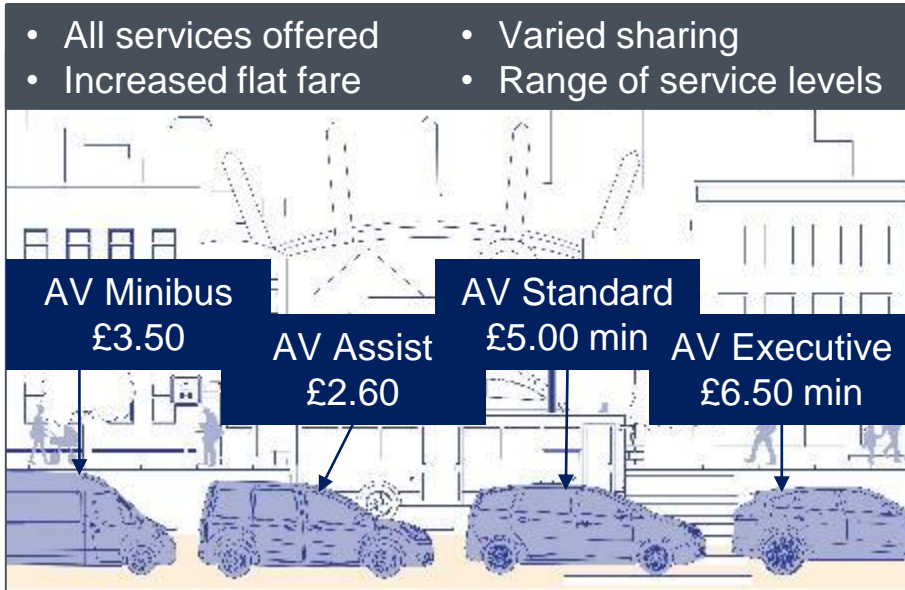


Very high
demand due to
low price

2) The Convenience Blueprint: Greater convenience but at a higher price



3) The Combined Blueprint: Best of both worlds



Range of services to suit all budgets

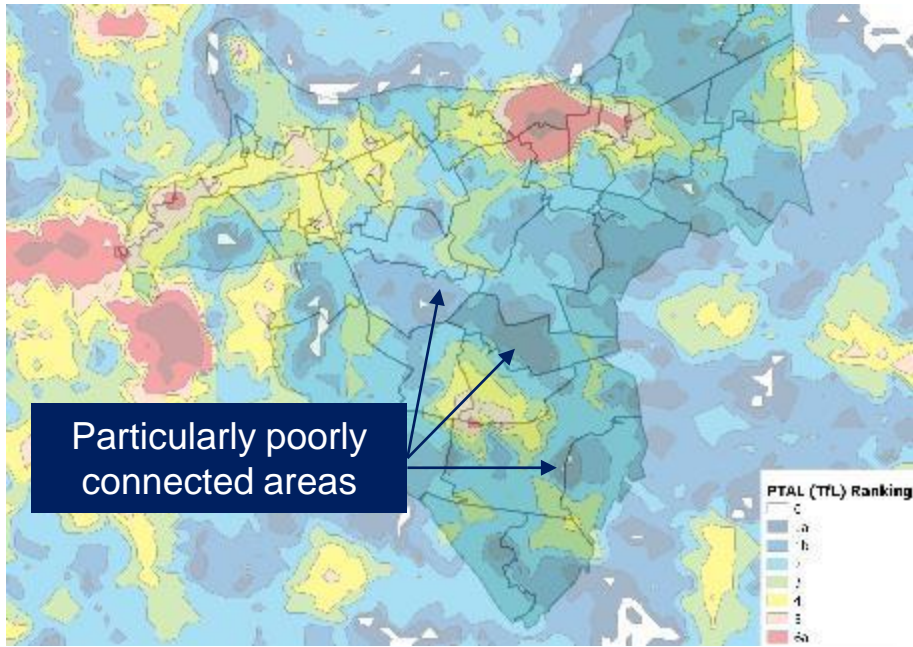
- Minibus
- Assist
- Standard
- Executive

AV ride-sharing can become significant



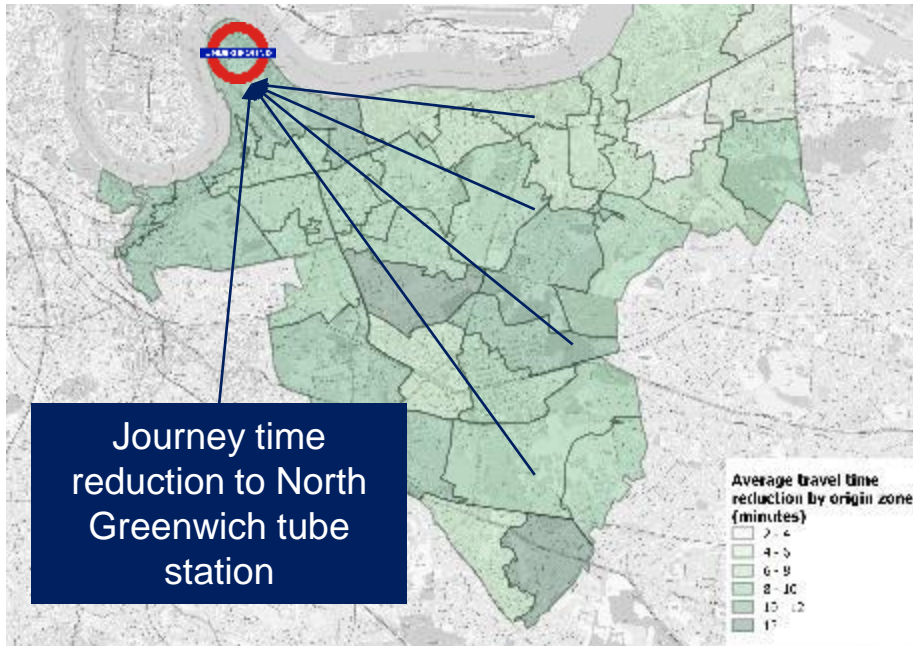
- 68% of trips could, in theory, be shared
- 85% willing to use an AV
- 46% willing to share
- Willingness could increase with an on-board steward
- **AV ride-sharing could deliver 28% of all trips**

It can make travel more accessible



- In areas with low public transport accessibility levels, an average journey time reduction of 53% (8 minutes)
- If the service is designed for greater convenience, this rises to 74% (10 minutes)

It can feed public transport hubs



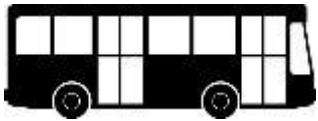
- Journey time reduction to public transport hub of 21% - 43%
- Commuters could save 3.5 days per year

Space could be repurposed



- Private car usage drops with the availability of the service
- 38% reduction in trips which require parking
- Equivalent to 61 tennis courts in Greenwich

More passengers could switch from buses



- Bus passengers are more sensitive to AV ride-sharing prices: 90p price increase = 15% drop in switching
- Car owners are more sensitive to parking costs: £2 parking cost = 42% increase in switching
- Need combination of pricing and external policies

Road congestion and emissions could increase

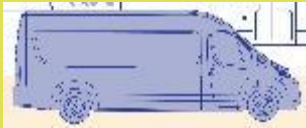


- Vehicle occupancy is key to reducing congestion and emissions
- AV ride-sharing needs to be:
 1. Designed & priced appropriately
 2. Introduced alongside external policies/ pricing structures

Services could be inequitable

Accessibility blueprint

28.3k trips per day



0% profit

Convenience blueprint

6.6k trips per day



~30% profit

- Services designed for convenience may be profitable but will limit accessibility
- Service design must align to city vision and mobility needs

*Figures exclude the Assist service

Vehicle costs could limit profitability

**1st generation
vehicles**

**Worst case
2/3 of cost**

**2nd generation
vehicles**

**Best case
1/3 of cost**

- 1st generation electric AVs cost significantly more than today's fleet
- PHEV will be lower cost
- Next generation vehicles could address this issue



Will AV ride-sharing make cities greener,
more efficient and more accessible?

Autonomous vehicle ride-sharing services can deliver city-wide benefits...



...but introducing these services in the wrong way can have unintended consequences

10 key insights from our simulations and analysis

- ✓ AV ride-sharing can be a significant mode of transport
- ✓ It can make transport more accessible
- ✓ It can 'feed' public transport
- ✓ Sharing can be convenient
- ✓ Scale is crucial to commercial viability

- ❖ More passengers could switch from buses than private cars
- ❖ Congestion and emissions could increase
- ❖ Services could be inequitable
- ❖ Vehicle costs could limit profitability
- ❖ On-board assistance may require a subsidy

Call to action: UK Government and industry

Create a
City Mobility Taskforce
with decision makers
from industry and
public sector

- **Set out a vision, strategy and roadmap** for the introduction of autonomous services on a city level
- **Propose policies** which encourage the right modal shifts and align to the wider social and environmental benefits
- **Educate the public** to ensure consumer adoption