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E-cargo cycles: Understanding consumer and operator perspectives on sustainable last-mile delivery

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UTSG | UNIVERSITIES' TRANSPORT STUDY GROUP

(BEIS, 2025, p.10) -

Why this matters

- Transport = UK's largest GHG sector (29% of the UK's total emissions) (BEIS, 2025, p.10)
- Vans = **16% of this**, and emissions are rising (DfT, 2022)
- Van emissions have **risen by 40% over 30 years**, with **travel distance more than doubling** (DfT, 2021; Beckford, 2022)
- In 2021, business-use vans accounted for **76% of van mileage** (40% of which was within just 15 miles of base) highlighting strong potential for localised alternatives like e-cargo bikes (DfT, 2021)

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Why this matters

- E-cargo bikes = **cleaner**, **smaller**, **quieter**, and often **faster** last-mile deliveries
  - (see: Celis-Morales et al., 2023; Sherriff, Blazejewski and Davies, 2023; Urbico, 2021; Vasiutina, Szarata and Rybicki, 2021)
- But still niche – **Why?**


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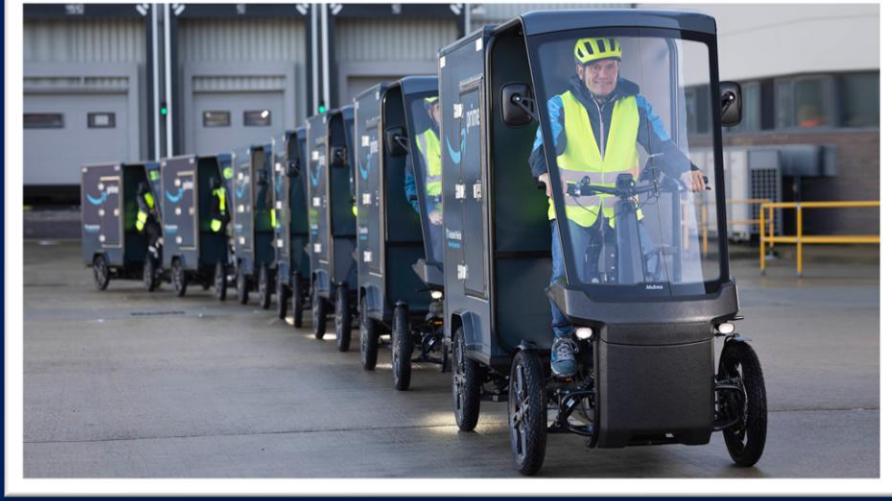



ZEDIFY


DHL
dpd


prime
E-Assisted Vehicle


bunch

Research Questions

1. What are the key challenges and opportunities for e-cargo bikes to replace vans?
2. How do businesses perceive them?
3. How do consumers perceive and respond to them?

Mixed-methods

Public perception

- **Survey** (n=307) across age, gender, income

Business perception

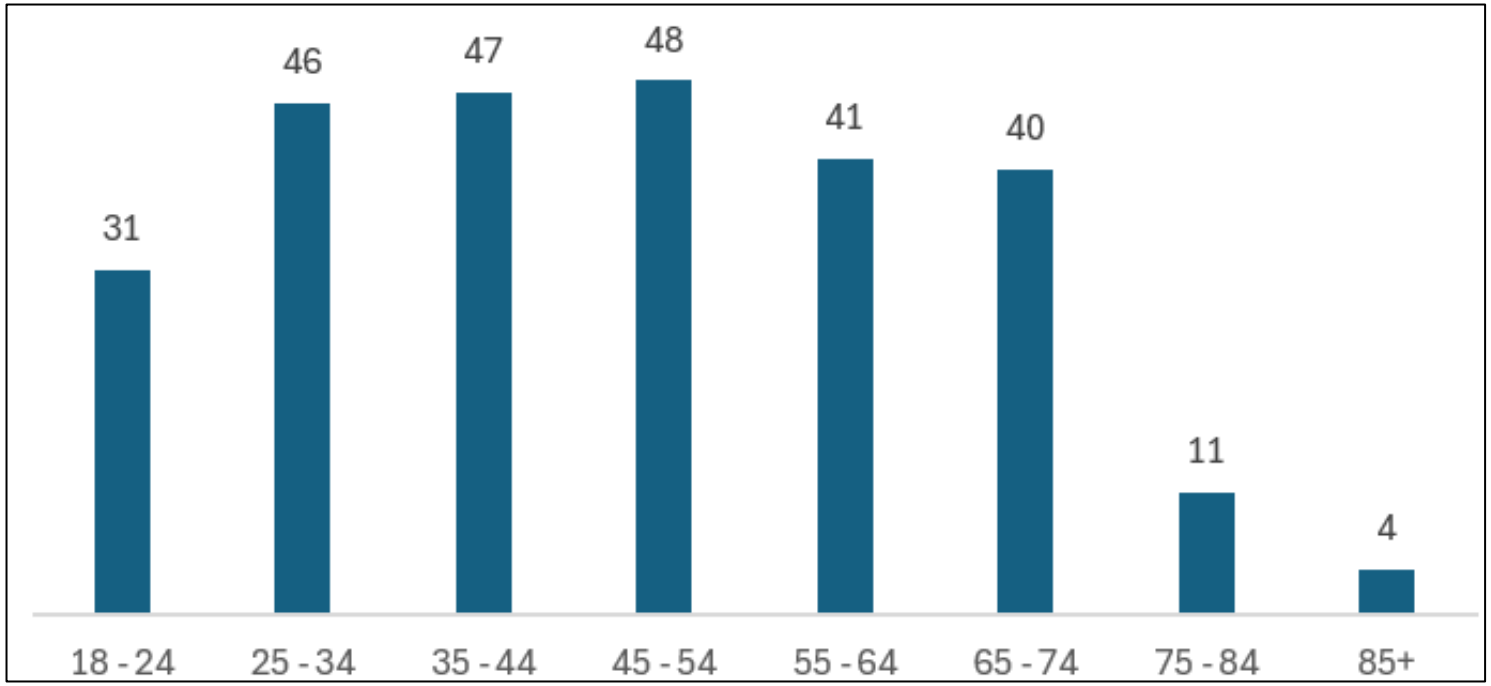
- **9 expert interviews**: from consultancies, logistics, local authorities

UK-based participants

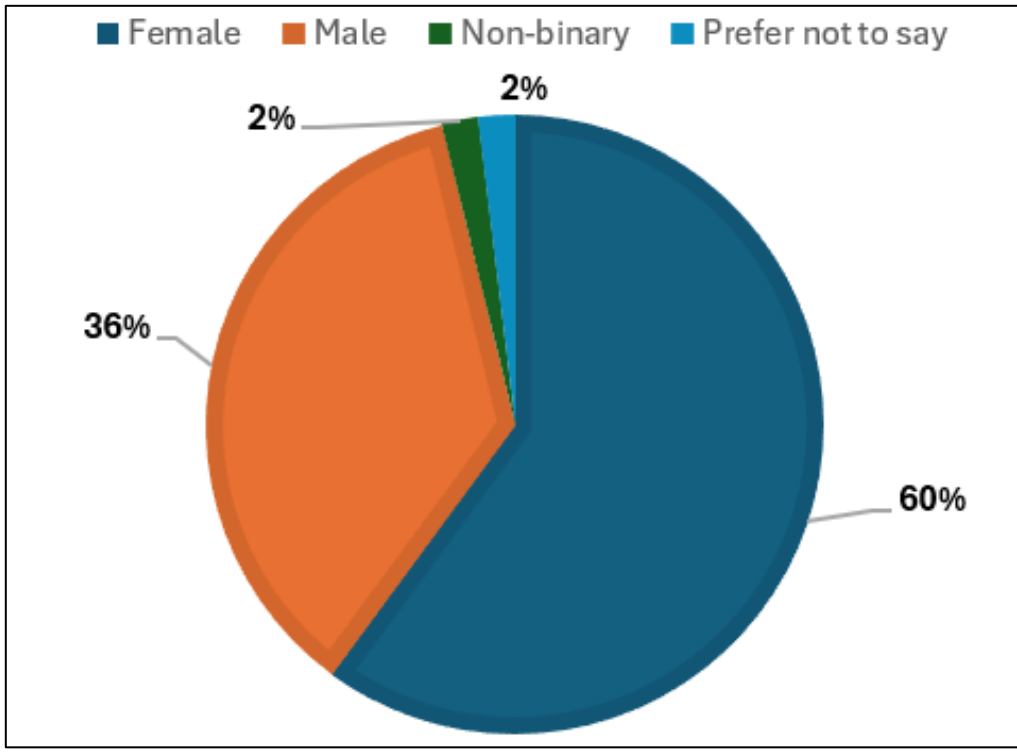
What does the public think?

Who took part in the survey?

Age



Gender



What do people think of e-cargo bike deliveries?

- **Environmental perception is strong**: 73.2% more environmentally friendly than diesel vans; 38.6% even prefer them over electric vans
- **Key benefits recognised**: lower CO_2 (80%), better urban quality of life (66.6%), support for local businesses (59.7%)
- **Local preference**: 43% want more e-cargo bikes and fewer vans in their area
- **Mixed views on safety**: safety perceptions divided (31.4% neutral, 27.5% think vans are safer)
- **Willingness to choose**: 36.8% likely and 28.2% very likely to choose e-cargo deliveries if available
- **Age matters**: Middle-aged groups (25–64) show strongest support; younger (18–24) and older (75+) groups are more neutral or less likely to prefer e-cargo deliveries

But, would they be willing to pay more?

- **General reluctance to pay extra**: 42.8% of respondents would not pay more for e-cargo bike deliveries; only 20.6% would be willing to

- **Gender difference significant** ($\chi^2 = 14.455$, $p = 0.006$): Women are less willing to pay more compared to men

- **Income-related effect significant** ($\chi^2 = 10.415$, $p = 0.034$): Respondents from higher-income households are more willing to pay extra (40.1%) than those with a lower income
  - This makes sense, but it is worth noting that high income households also **consume more**, have **more deliveries**, and have a **higher carbon footprint** in general (*Nielsen et al., 2024)*

So, what factors influence consumers to choose e-cargo bike deliveries?

- **Delivery mode choice is key**: 35% would be more likely to use e-cargo bikes if they could select the delivery method
  - Currently rare to be offered a choice of mode of delivery

- **Cost matters**: 30% highlighted cost as a major factor, with most expecting no price difference compared to van deliveries

- **Sustainability is valued**: 15% are motivated by environmental impact and reduced traffic congestion

- **Efficiency and speed**: 10% emphasised delivery time as a deciding factor

However…

- **Infrastructure needs**: 5% noted the importance of safe cycling infrastructure (e.g. bike lanes) to enable reliable service

- **Other concerns**: Rider safety (e.g. steep hills, busy roads), as well as secondary factors like convenience and reliability (each noted by 5%)

What do businesses and experts think?

Who have we interviewed?

Code	Organisation type	Job role	Location
IP1	Transport Consultancy	Head of Consulting	London
IP2	Sustainable Urban Logistics Company	Head of Marketing	National
IP3	Micro-mobility Logistics Company	Chief Operating Officer	Europe
IP4	Transport Consultancy	Senior Consultant	London
IP5	E-Cargo Bike Logistics	Director	Colchester
IP6	E-Cargo Bike Logistics / Courier	Founder	London
IP7	Transport Consultancy	Consultant	London
IP8	Urban Logistics Consultancy	Independent Consultant	National
IP9	Transport Authority	Advisor	London

What do they see as key barriers to scaling e-cargo bike operations?

High initial costs are an important concern for businesses

"Many small businesses are hesitant due to the high upfront costs, despite long-term savings." (IP4)

- E-cargo bikes have a lower total cost of ownership over time
- However, initial capital investment can be identified as a significant financial barrier (Blazejewski, 2020)

The Gig Economy makes it difficult to get a clear picture of the situation

"While cargo bikes are inherently more efficient, the gig economy distorts cost comparisons, making van-based operations seem artificially cheaper." (IP6, IP4)

- Logistics providers operating within the gig economy shift employment-related costs onto workers
- This can make their operating expenses appear lower than they truly are

What do they see as key barriers to scaling e-cargo bike operations?

E-cargo specific infrastructure is critical to expansion, but currently missing
"Without dedicated trans-shipment hubs, e-cargo bikes are forced to operate from locations designed for vans." (IP4)

- E-cargo bike logistics would benefit from hubs that are close to delivery zones to maximise efficiency

Regulatory confusion discourages uptake
"Policy frameworks still treat e-cargo bikes like bicycles, ignoring their role as commercial vehicles." (IP4, IP7)

- Businesses are often left uncertain about where and how e-cargo bikes can operate
- Particularly in relation to pedestrian zones, taxation, and access to fleet subsidies (Urban Freight Lab, 2023)

Summary: What do businesses and experts see as key barriers to scaling e-cargo bike operations?

Our findings suggest that e-cargo delivery's full potential is blocked not by a lack of interest…

But by a mismatch between infrastructure, policy, and economics

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What needs to happen for e-cargo bike delivery to succeed?

Stronger business models and clearer incentives

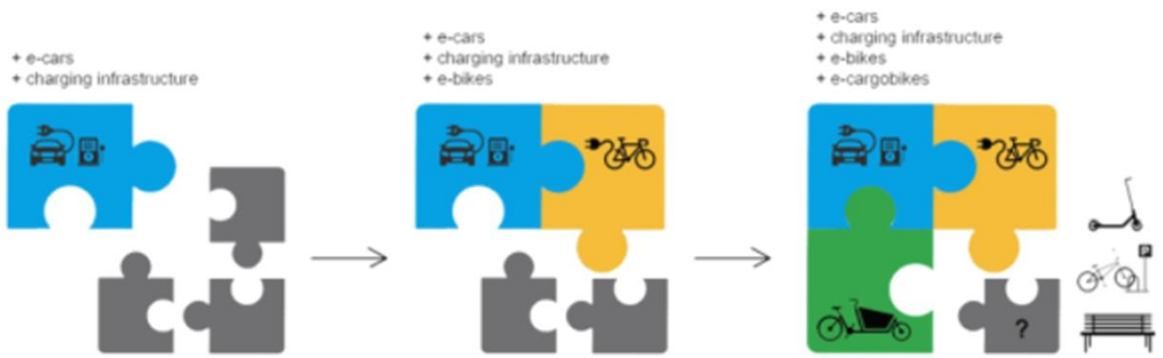
- The perceived economic advantage of van deliveries is, in part, due to inequitable cost distribution rather than an inherent efficiency
- However, initial capital investment has been identified as a significant financial barrier (Blazejewski, 2020)
- This suggests that without accessible financing options, businesses may struggle to justify the switch

Infrastructure investment

"Cities like Bristol lack the infrastructure for effective e-cargo operations compared to London." (IP10)

- Micro-hubs near delivery zones
- Lack of secure e-cargo parking and charging (see: Honbike, 2023)
- E-cargo as a part of new e-mobility hubs? EVs, e-bikes, e-cargo?

New eMobility eHub offering electric cars, e-bikes and e-cargo bikes for the public launches in Galway City



“Purpose-built eHub sites will include an ESB charge station with one e-cargo bike and four e-bikes

Trinity College Dublin, together with Atlantic Technological University (ATU), ESB and Enterprise Car Club, are today launching the first of four shared eMobility eHubs at Westside Library Car Park at the heart of the decarbonisation zone in Galway City.

Additional eHubs will open at sites in Dundrum, Letterkenny and Waterford over the coming months.

(Handling Network, 2019)

What needs to happen for e-cargo bike delivery to succeed?

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Visibility and consumer influence

"If given the choice between van or cargo bike at the same price, people would choose cargo bike." (IP10)

- Consumer sentiment can favour more sustainable modes of delivery if the offering is made available and accessible
- However, one expert warned against over-relying on consumers to lead this change:

"Logistics isn't very visible… I don't really think we can put any onus on the consumer to ask for change".
(IP4) – Link: Our survey also found that people generally aren't willing to pay more

Training and workforce development

"There's a lack of standardised training programs for e-cargo couriers., leading to inconsistent service quality" (IP2)

"Finding skilled riders is difficult, as the role requires both physical endurance and logistical knowledge." (IP9)

- Successful integration of e-cargo bikes into urban delivery systems needs addressing the skills gap, as well as training requirements for operators
- Unlike traditional delivery vehicles, e-cargo bikes require specific handling skills, especially in dense urban environments

Summary: What needs to happen for e-cargo bike delivery to succeed?

Our findings suggest that e-cargo expansion depends on more than green credentials and leaving it to the customer to choose…

It requires whole-system thinking: Policy, infrastructure, training, and visibility must align

Government and large operators need to lead

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Conclusion and key takeaways

- E-cargo bikes offer a promising, low-emission solution for sustainable last-mile urban logistics
- Adoption is currently limited by **financial barriers**, **poor infrastructure**, and **fragmented regulatory support**
- Businesses remain hesitant, citing concerns over **scalability, cost, and operational fit**
- Lack of training and workforce development creates **inconsistencies in service quality**

Conclusion and key takeaways

- The environmental and social benefits are clear: **reduced emissions**, **cleaner air**, **quieter streets**, and **new (healthier?) jobs**

- Scaling requires **coordinated action**: targeted incentives, policy clarity, infrastructure investment, and public-private collaboration

- With the right support, e-cargo bikes can shift from niche to norm, contributing to greener, more resilient cities

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Thank you!

Any questions?

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