Institute for Transport Studies
FACULTY OF ENVIRONMENT

UNIVERSITY OF LEEDS

What is an e-cargo bikeable trip?

Presentation for eceee Summer Study **10-15th** June 2024

Panel 6. Energy-efficient and low-carbon mobility and transport

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"Would you recommend an eCargo bike to other people?

Yeah, definitely, yeah.

For what kind of uses? What's it good for?

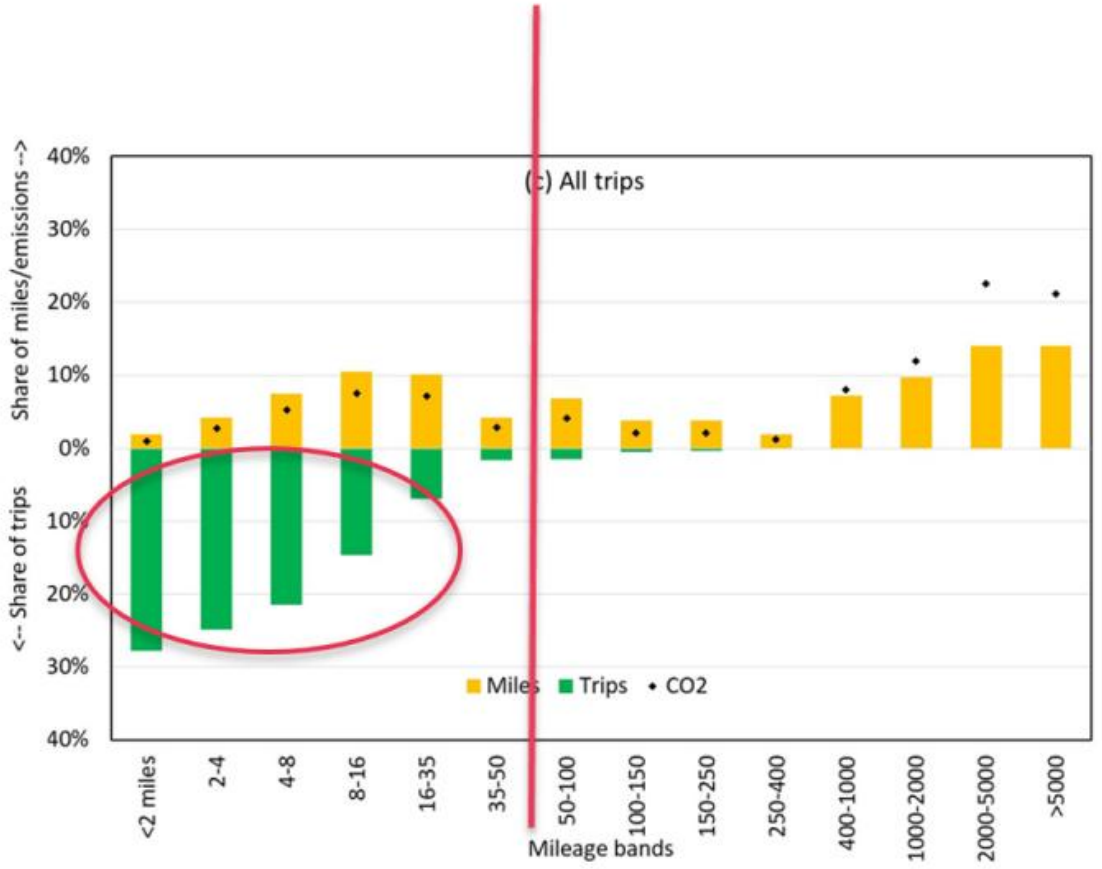
Well, it's good for everything really." (B10)

E-cargo bikes' theoretical potential for substituting car trips: Trip distances

97% of all UK trips (including flights) are under 50 miles (Wadud et al. 2024 *in press*)

(however, the 3%t=60%d=70%c)

~30% of all car trips are <=10 miles/16km (DfT 2022)



Particular suitability

Cargo function – Especially for shopping? – ~75% urban trips (Wrighton and Reiter 2016)?

Passenger function – the main advantage for parents especially (Riggs 2016, Bjørnarå et al. 2019)

Weather-proofing – – because *“weather protection [was] identified as potential weakness of CBs* (Dorner & Berger, 2020; Hess & Schubert, 2019) […] *more advanced (e.g., weather-protected) CBs could increase comfort”* (Bissel and Berger 2024: 221, 230)

Assistance – multiple benefits – extend older use (Johnson and Rose 2015, Leger et al. 2019), especially in hilly areas (Behrendt et al. 2021), health/fitness?

Particular suitability

Cargo bikes vs cars…

Environmental benefits taken for granted

Affective advantage predicted

Instrumental high comparisons

Weather the exception

M. Bissel and S. Becker

Transportation Research Part F: Psychology and Behaviour 101 (2024) 218–235

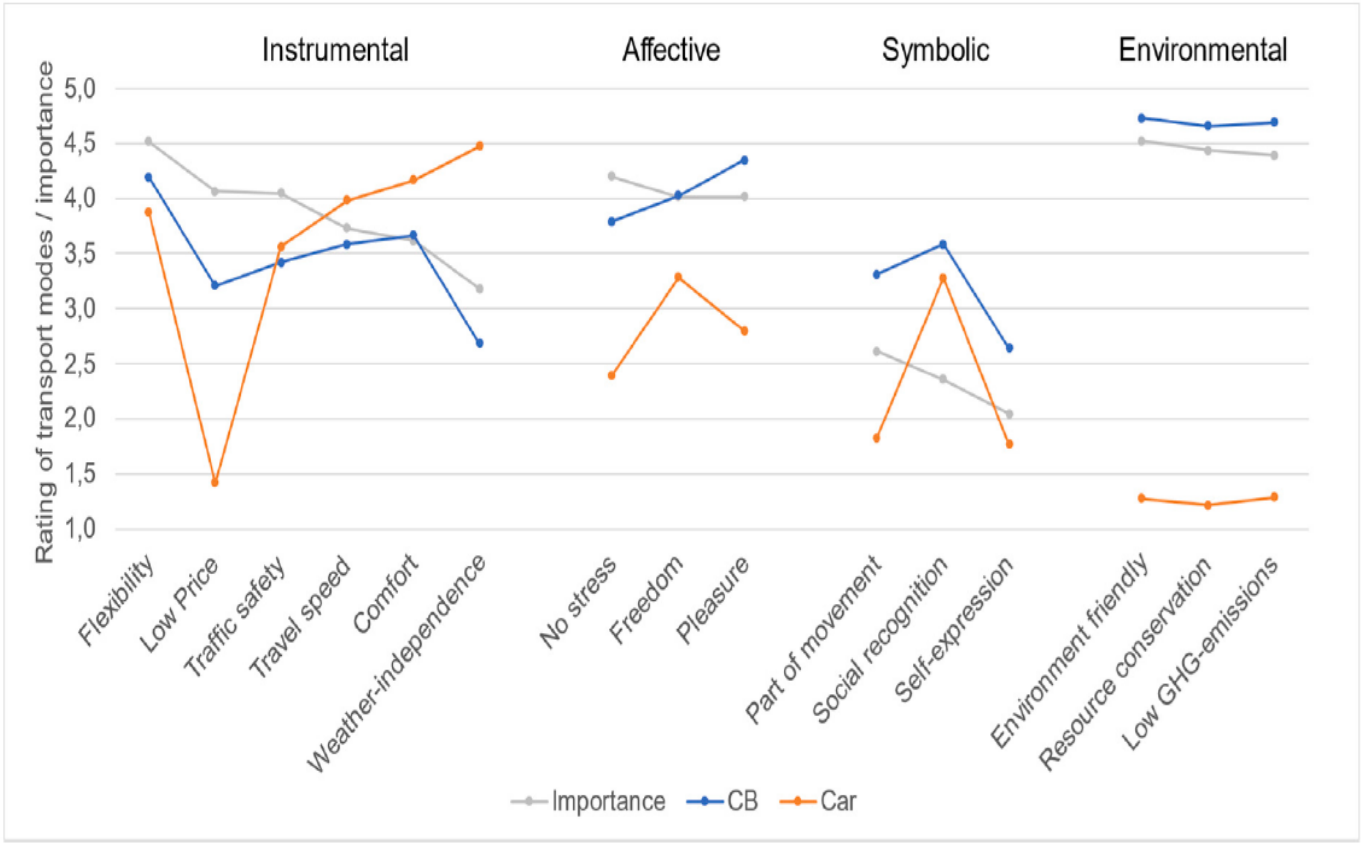


Fig. 4. Ratings of CBs and cars with regard to different motives.

The research gap

Non-shared and **non-commercial** use, and **non-health** impact focus

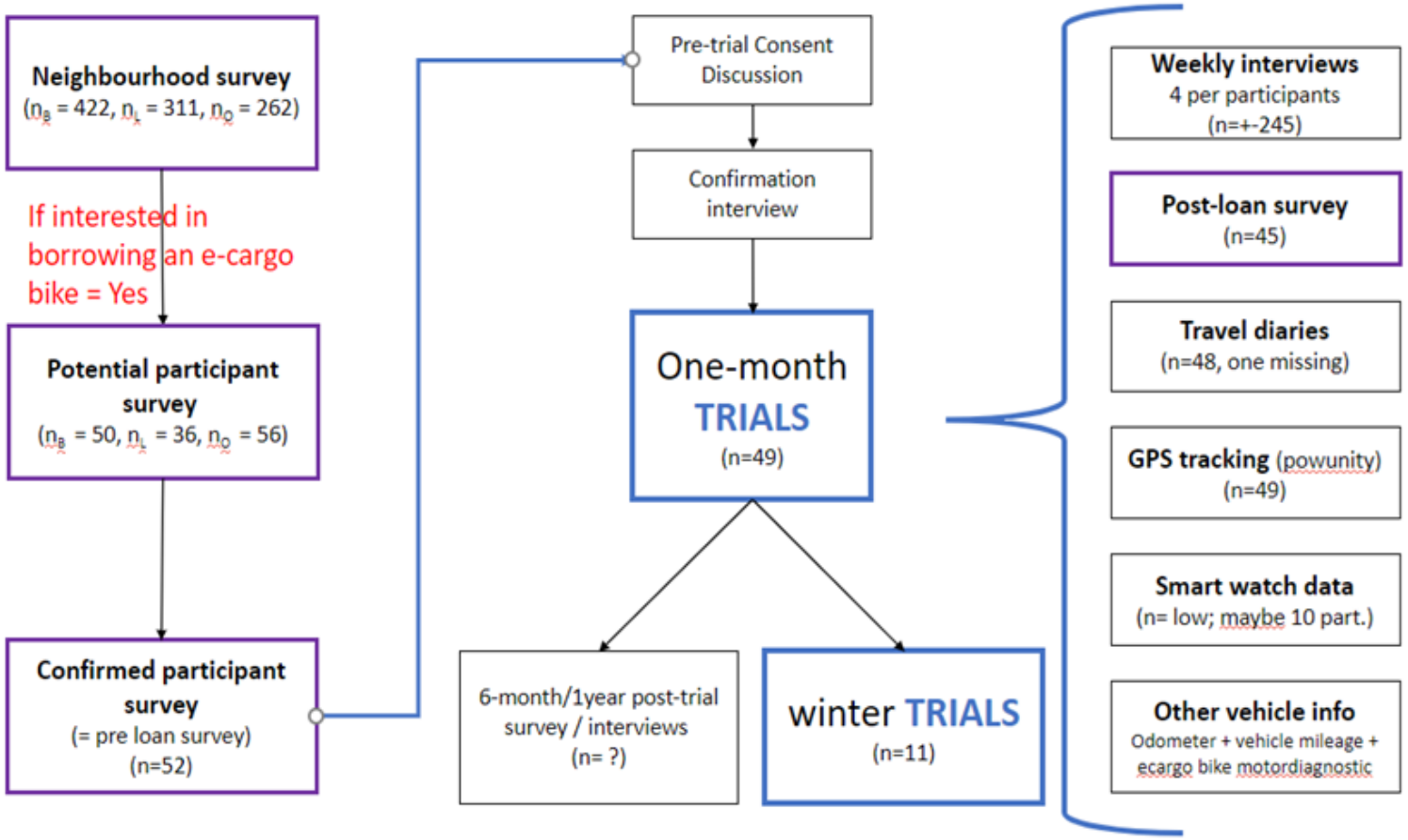
Household use - *"Although E-cargo cycles can be used for both private and commercial transport, the current literature concentrates more on the latter"* (Narayanan and Antoniou 2022: 279) *"More attention could be given to the emerging trend of e-cargo bikes which enhance the possibility to carry goods and children"* (Rérat et al. 2024: 10)

Longer than e.g. daily hire **loans**: *"35% of the respondents* [Becker and Rudolf 2018] *conveyed that they are planning to buy a cargo cycle. Thus, cargo cycle sharing schemes can induce purchase of cargo cycles."* (Narayanan and Antoniou 2022: 294)

Empirical trials – *"providing parents with children in kindergarten with access to e-bikes might result in increased and sustained cycling, also during the winter season"* (Bjørnarå et al. 2019)

The Elevate project and neighbourhood trials

Surveys tested awareness, use, attitudes and behaviour
Nationally representative, neighbourhoods, participants



The Elevate project and neighbourhood trials

Sample:

Keener than average cyclists

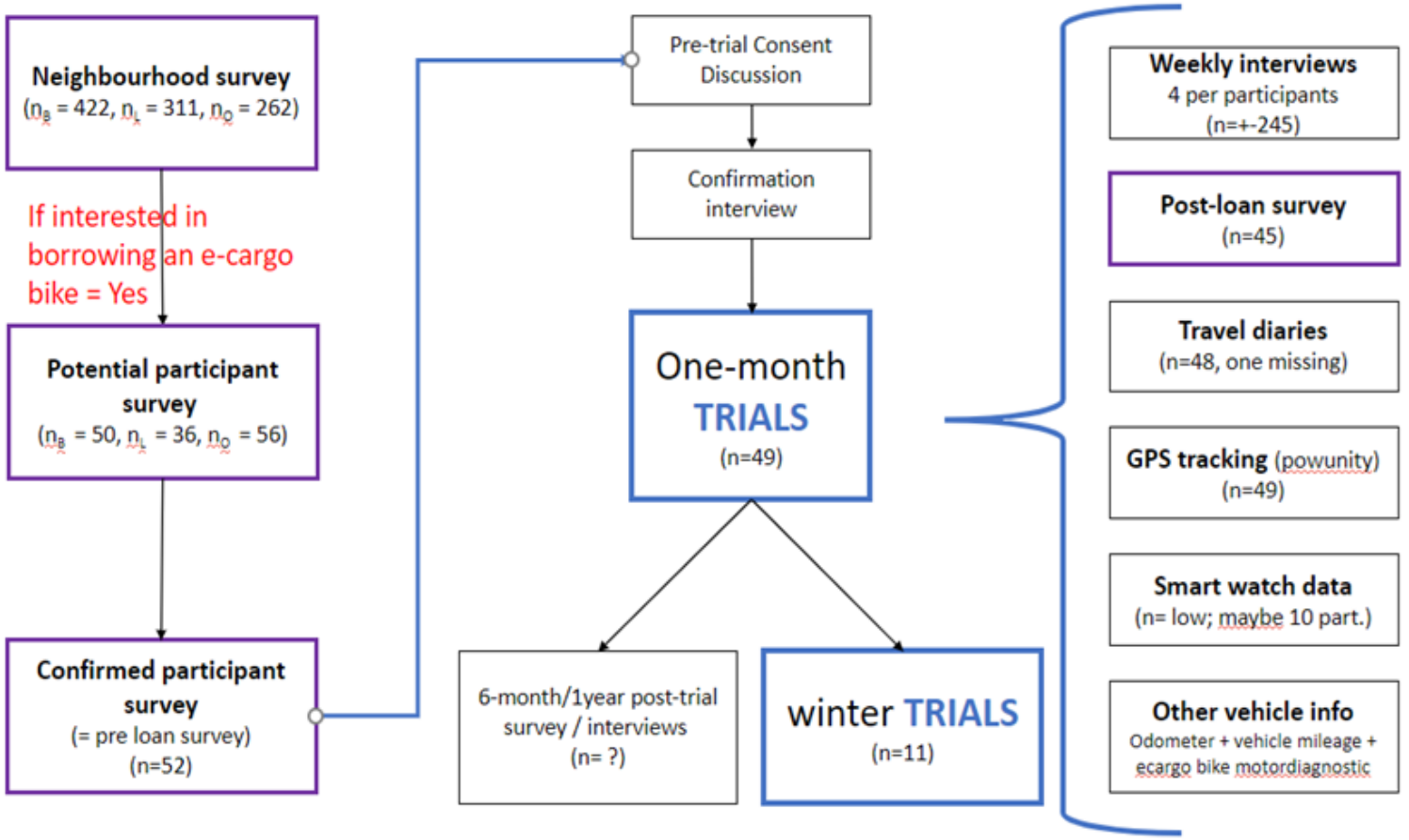
Who also drive more than average

More cycles AND cars than average

Wealthier than average - 64% sample (-44% neighbourhoods, ~30% nationally) HH income £50k+

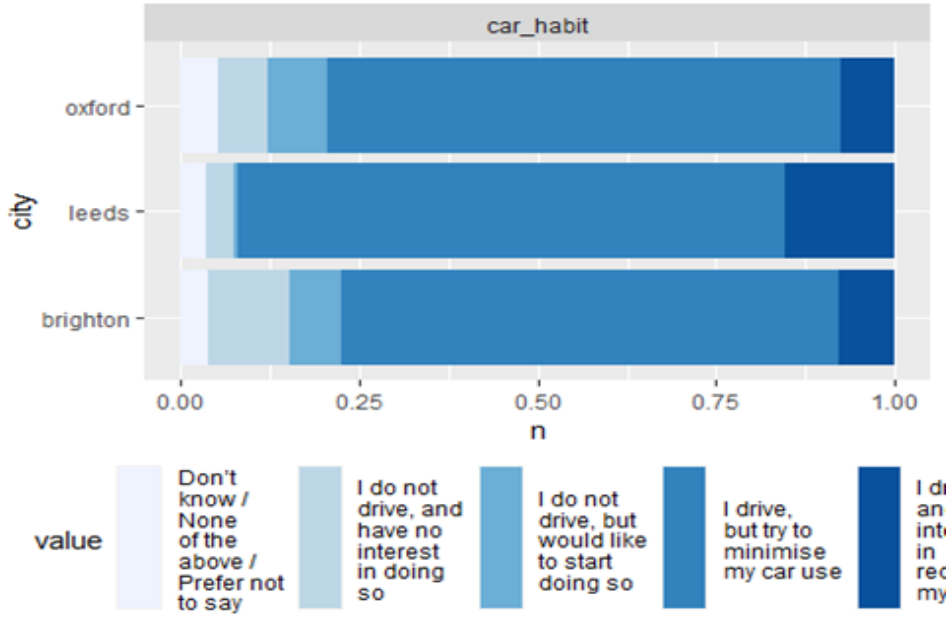
Middle aged with children

~2/3 with children under age 10

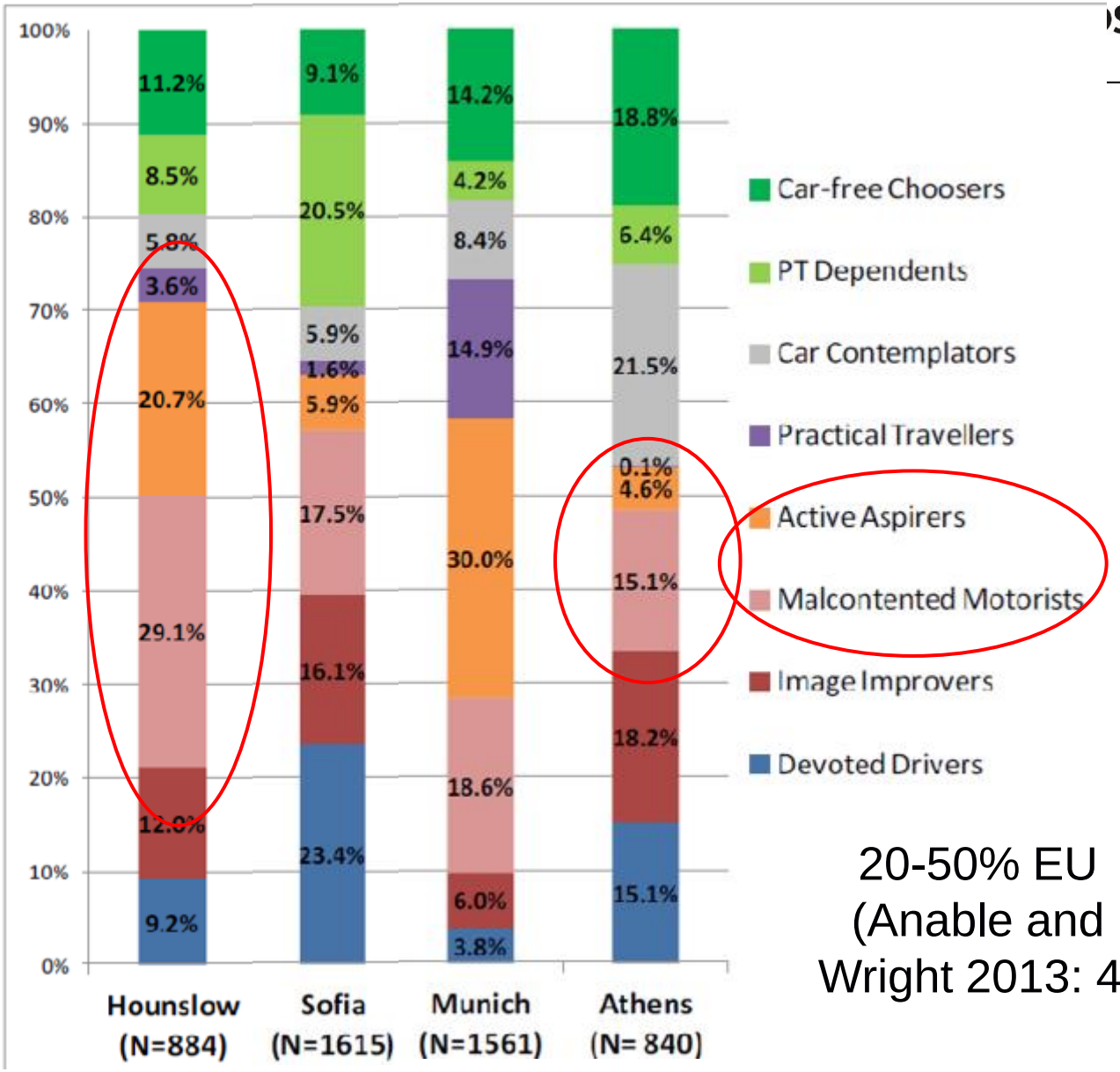


The Elevate sample

Sample:



"I drive but try to minimise my car use" 70+%



20-50% EU (Anable and Wright 2013: 4)

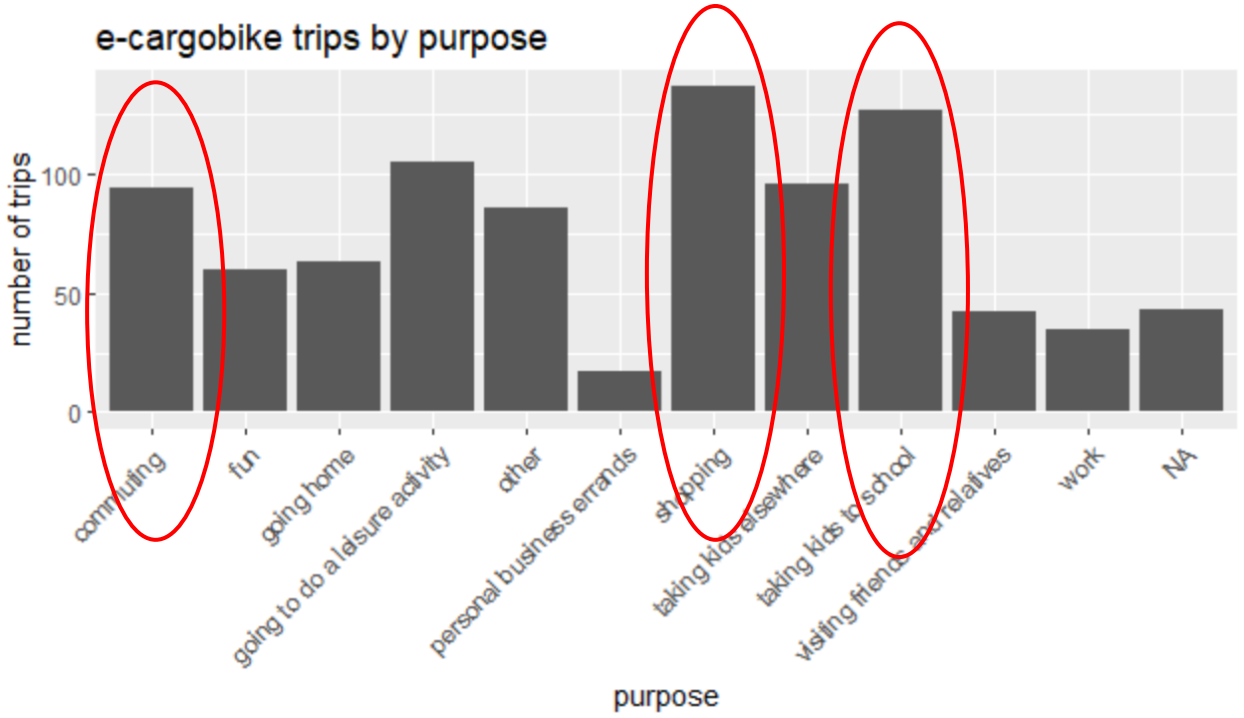
Findings: Expectations and ‘results’

Used as expected for shorter (<30mins?), habitual/regular trips: especially shopping, child transporting, commute (qual and quant)

Used more than expected for some longer trips, mostly leisure, visits, commute, appointments (qual)

Used less than expected for transporting smaller children (objected), too close destinations (faff), large food shops (not enough space – but many did)

Often substituted bike trips.



Children: “I really genuinely hope that, you know, the revolution starts with mums doing the […] school commute” (L45)

Shopping: “just nip […] and do the shopping […] and not have had to do that in the car because I need to carry bags” (L138)

Commute: “I absolutely loved it, it was, just getting to work and not being in a sweat, there’s a lot to be said for that.” (L18)

Extend: “we’ve been further and done more on the Cargo bike because I don’t have to think to myself ‘oh that’s a bit *far* for [child] or it’s a bit *unsafe* for [child] or it’s a bit *hilly* for [child]’” (L45)

Substitute: “it will revolutionise my approach to short journeys, which right now is driving a diesel estate that’s forever hauled 2 miles away, multiple times a week” (L208)

Range: “I think a 20-minute ride with a child. 20 to 30 minutes. Which is most rides. Three or four miles, isn’t it?” (B172)

Double-edged sword of flexibility: “if I worked in Leeds every single day then I probably would think about getting an electric bike to do the commute but because I do it once or twice a week then I probably can’t really justify it kind of thing.” (L203)

Older shift from car to desired bike: “I want to retire and I want some mode of transport that can take me further but I want to cycle because that helps with mobility and fitness and I like cycling, but a normal bike can be a bit difficult, especially as you get older.” (O61)

Majority, not all car: “I think trying to convince people that it is going to completely switch out the car […] I don't know if that's really going to be the way to get it through to people. It's more like it could replace up to 90% of the journeys that you do by car” (L45)

Affective: “we've loved having it, I think it's definitely sold us a kind of, a vision of a more fun way of getting around” (B277)

Second ‘car’: “if for example my wife needs to go somewhere else, she can do it, with the car, and I can just rely on the Cargo […] I can do everything with it, as if I had a second car basically. So playground, shopping, swimming, whatever, picking something up” (L329B)

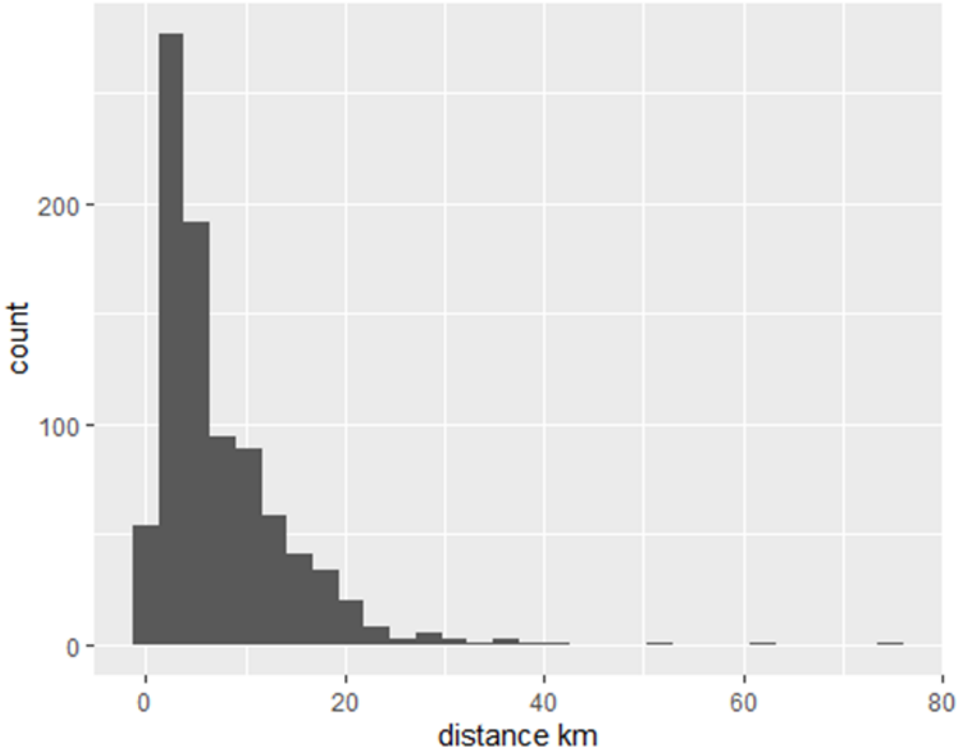
Findings: Trip characteristics - averages

"With respect to the average distance travelled, Şengül and Mostofi [7] reported between 0.72 and 2.4 km for e-scooters and between 3 and 4.5 km for e-bikes." (Teodorașcu et al. 2024: 2)

Our mean trip length (8km) is at top end of what people think of as a cyceable trip length – extends cycleable distances, and adds utility of carrying cargo and children

Distance (aka time) was most cited reason for using car instead.

"maybe 8 mile from Leeds because I go on the canal. That's probably about the maximum" (L208, F)



4-5km mode, 6km median, 8km mean

Issues

City-specific differences? Usage varied as much within as between.

Typologies of **super-users**: second, non-car partner, especially with young (cycle-accustomed?) children, both types of ECB; women keeping up with partners; keen cyclists; newly car-free

Lifestyle/Household-specific? Yes, with clusters of e-cargo bikeable trips, i.e. routines of household practice coordination and scheduling.

Practice theory: Key competences of cycling, overlaps with positive/valued elements of cycling (health, fitness, eco, fun, transition time), and also driving (‘normal’ clothes for work, speed,hills, cargo, passengers)

Policy: Don’t look at means, look at practices of potential user groups. Also – identifies the car-dependent practices (even for keen adopters and changers) – need to be targeted with policy sticks, or solutions found (especially e.g. car clubs)

Thank you!

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https://environment.leeds.ac.uk/transport/staff/9270/dr-noel-cass

https://x.com/noelfcass?lang=en