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Understanding the future market for Electric Vehicles: Results from a real-world trial with mainstream consumers

Dr Neale Kinnear
Head of Behavioural Science – TRL

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Understanding the future market for Electric Vehicles: Results from a real-world trial with mainstream consumers

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Consumers, Vehicles and Energy Integration

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What is the Consumers, Vehicles and Energy Integration project?

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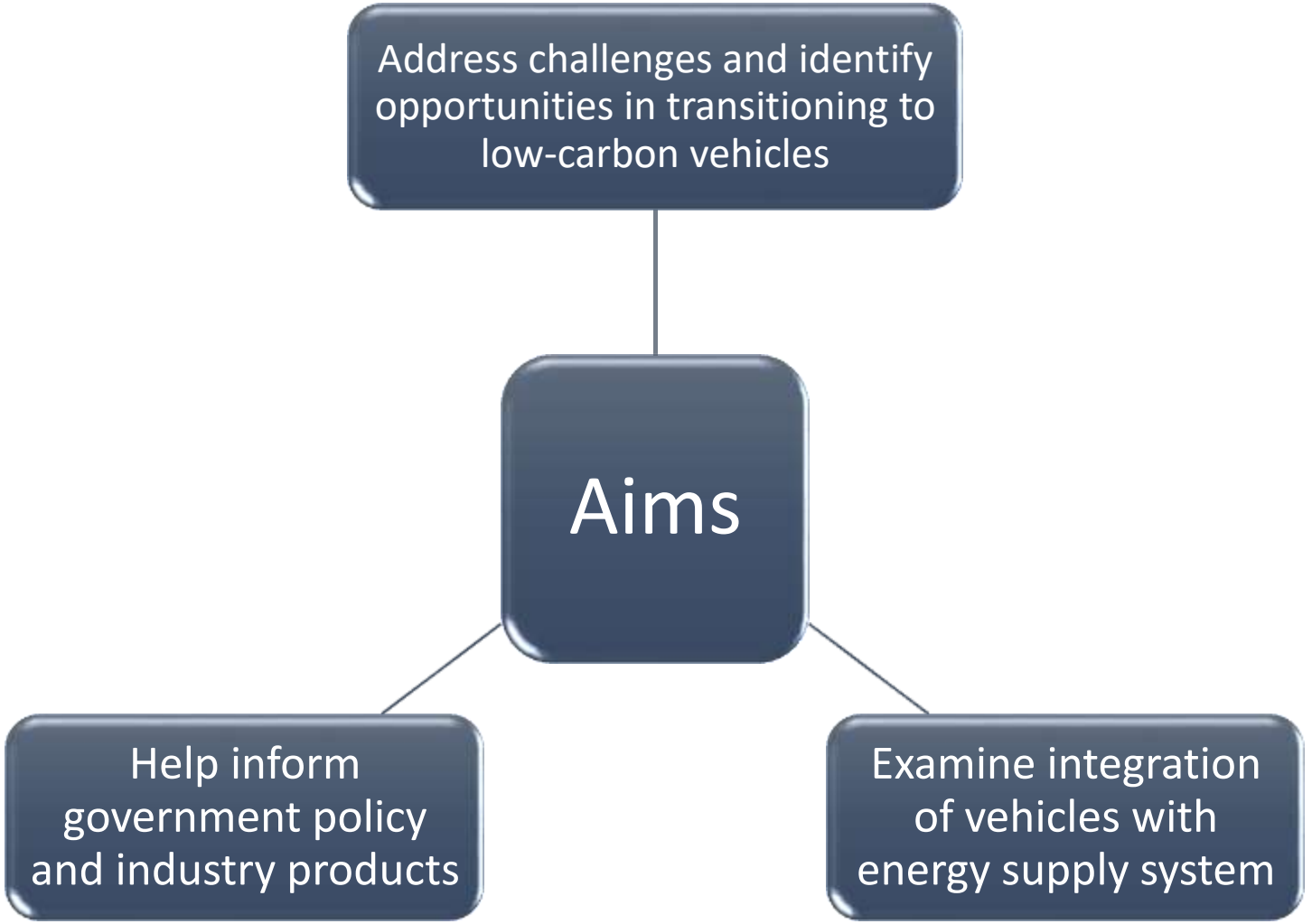

Innovative and ambitious project commissioned by the Energy Technologies Institute (ETI)

Cross-industry consortium led by TRL

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Integration of modelling tools

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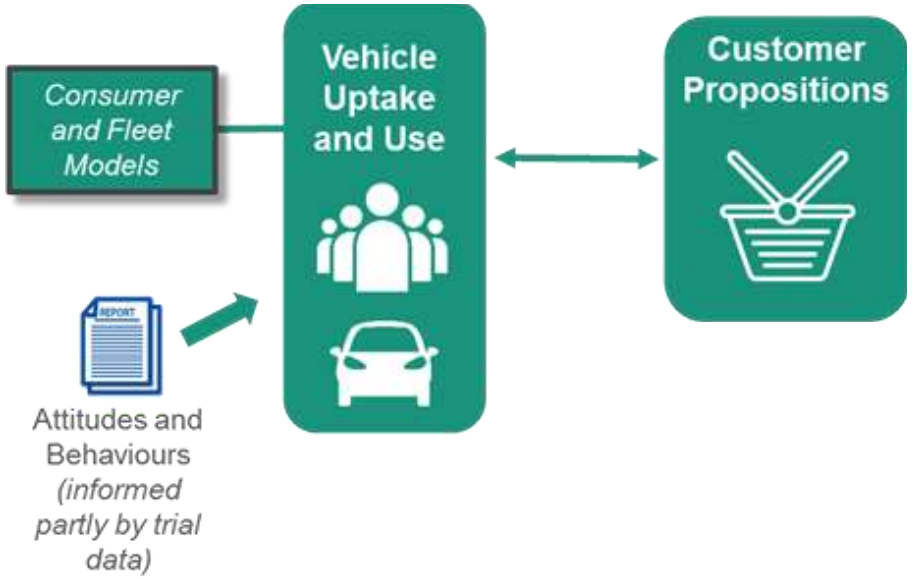

Knowledge gaps addressed by CVEI

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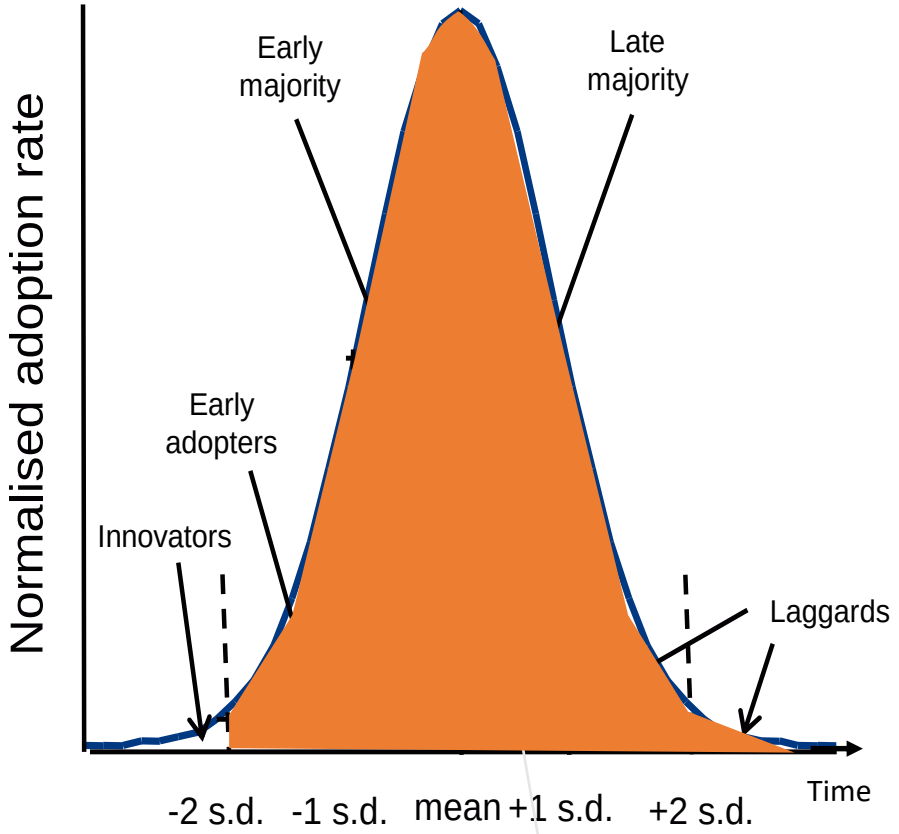
1. Mainstream Consumer BEV adoption
2. Mainstream Consumer PHEV adoption
3. Mainstream Consumer charging behaviour
4. Mainstream Consumer response to managed charging
5. EV adoption and consideration of managed charging by fleets



Mainstream consumers (i.e. the mass-market)

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What did we do?

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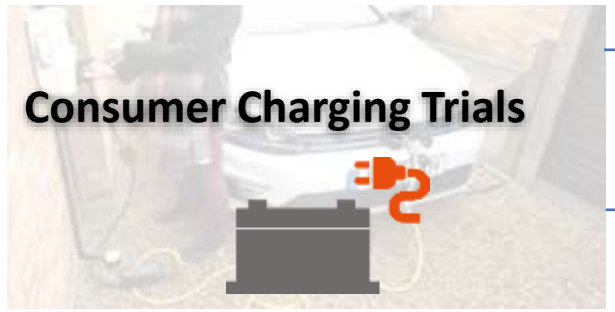

Fleet research

BEV trial

PHEV trial

Data analysis

Update modelling tools

Policy and market recommendations

Reporting and dissemination

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Consumer Uptake Trial

World's first trials of BEVs and PHEVs exploring mainstream consumer adoption

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Uptake trial - Overview

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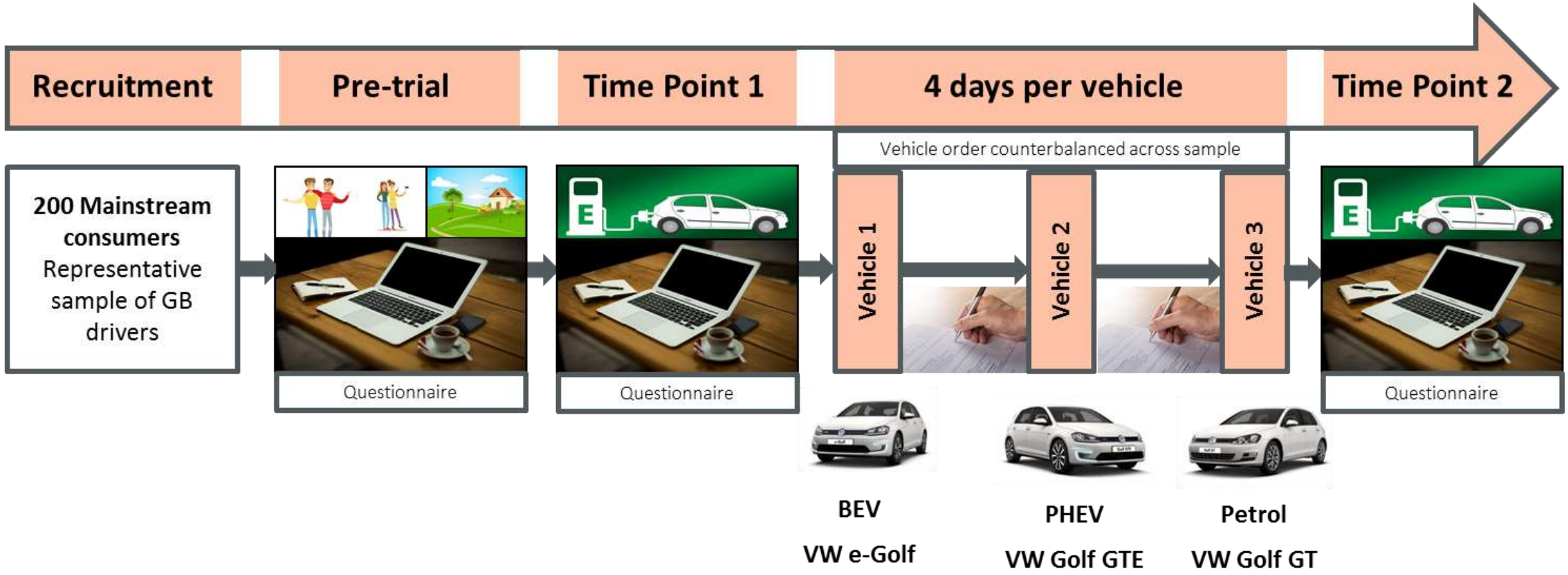

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Likelihood to choose a BEV or PHEV in the next 5 years

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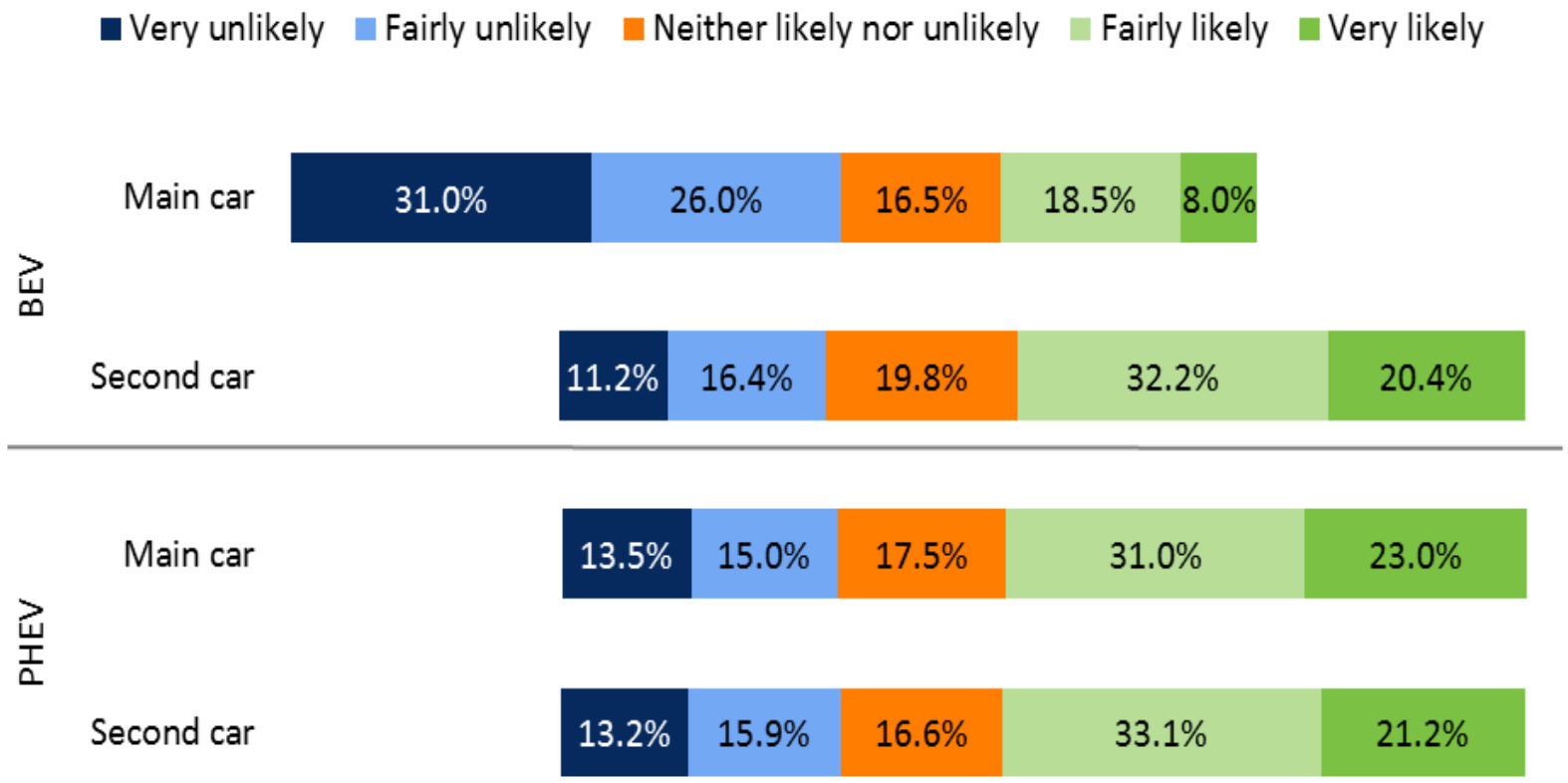

- ~25% likely to choose a BEV as a main car
- ~50% likely to choose BEV as second car
- ~50% likely to choose PHEV, as either main or second car
- Positive outlook for the market in the near term

Reported likelihood to choose a BEV or PHEV

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What can we do to encourage the market?

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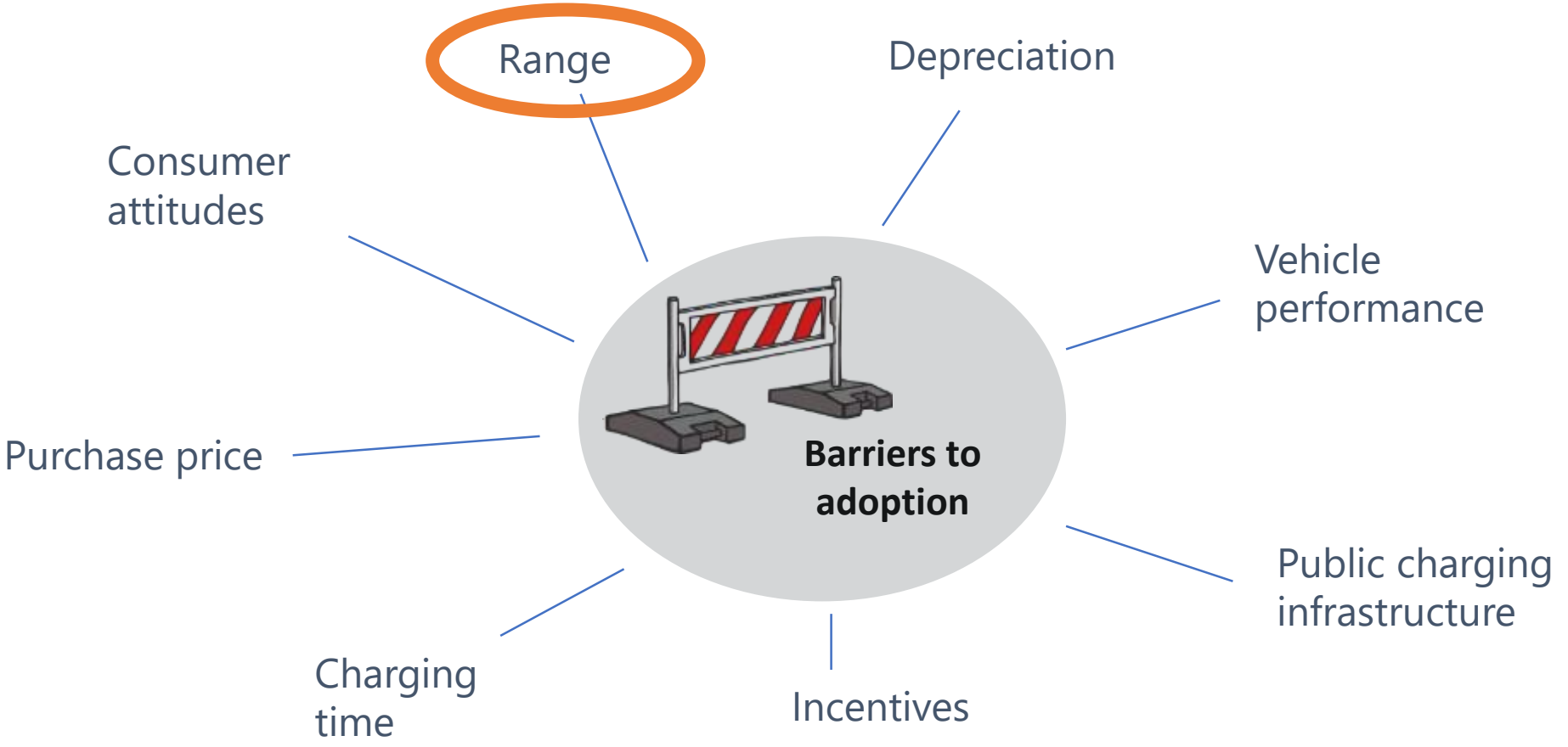

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200mi BEVs appeal to 50% consumers; 300mi BEVs appeal to 90%. Lower ranges appeal as second cars

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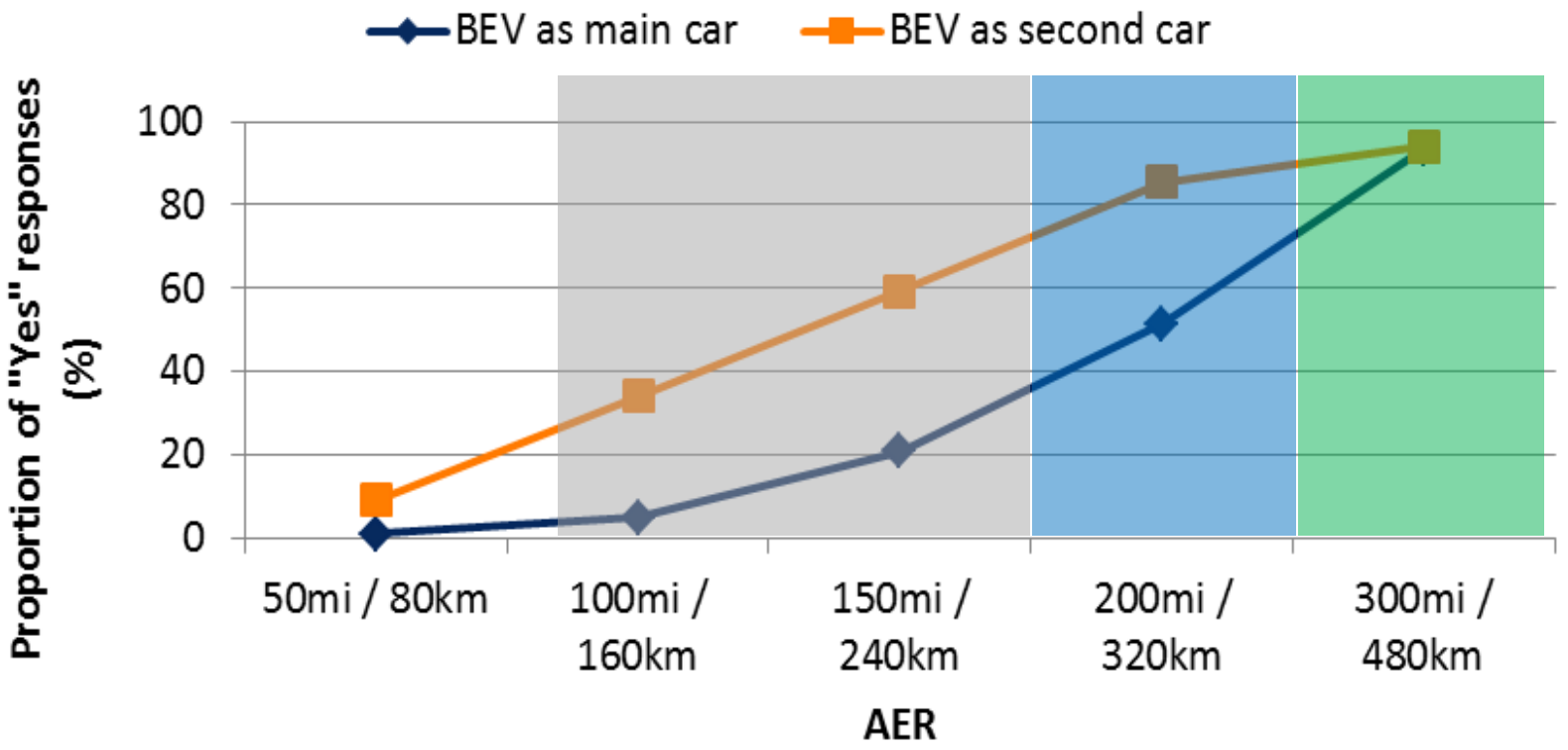

- Tesla Model S Long Range: 375 miles
- Tesla Model 3 Long Range: 384 miles
- Tesla Model X Long Range: 315 miles
- Jaguar I-PACE: 292 miles
- Kie E-Niro: 282 miles
- Hyundai Kona 64kWh: 279 miles
- Audi e-tron: 241 miles
- Nissan Leaf 62kWh: 239 miles
- BMW i3: 193 miles
- VW e-golf: 186 miles
- Renault Zoe: 186 miles

➢ Vehicle models improving, but more choice needed to appeal to majority

Source: WLTP - https://www.carmagazine.co.uk/electric/longest-range-electric-cars-ev/

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PHEV range is also important: 50mi PHEVs appeal to 50% of consumers; 100mi PHEVs appeal to 90%.

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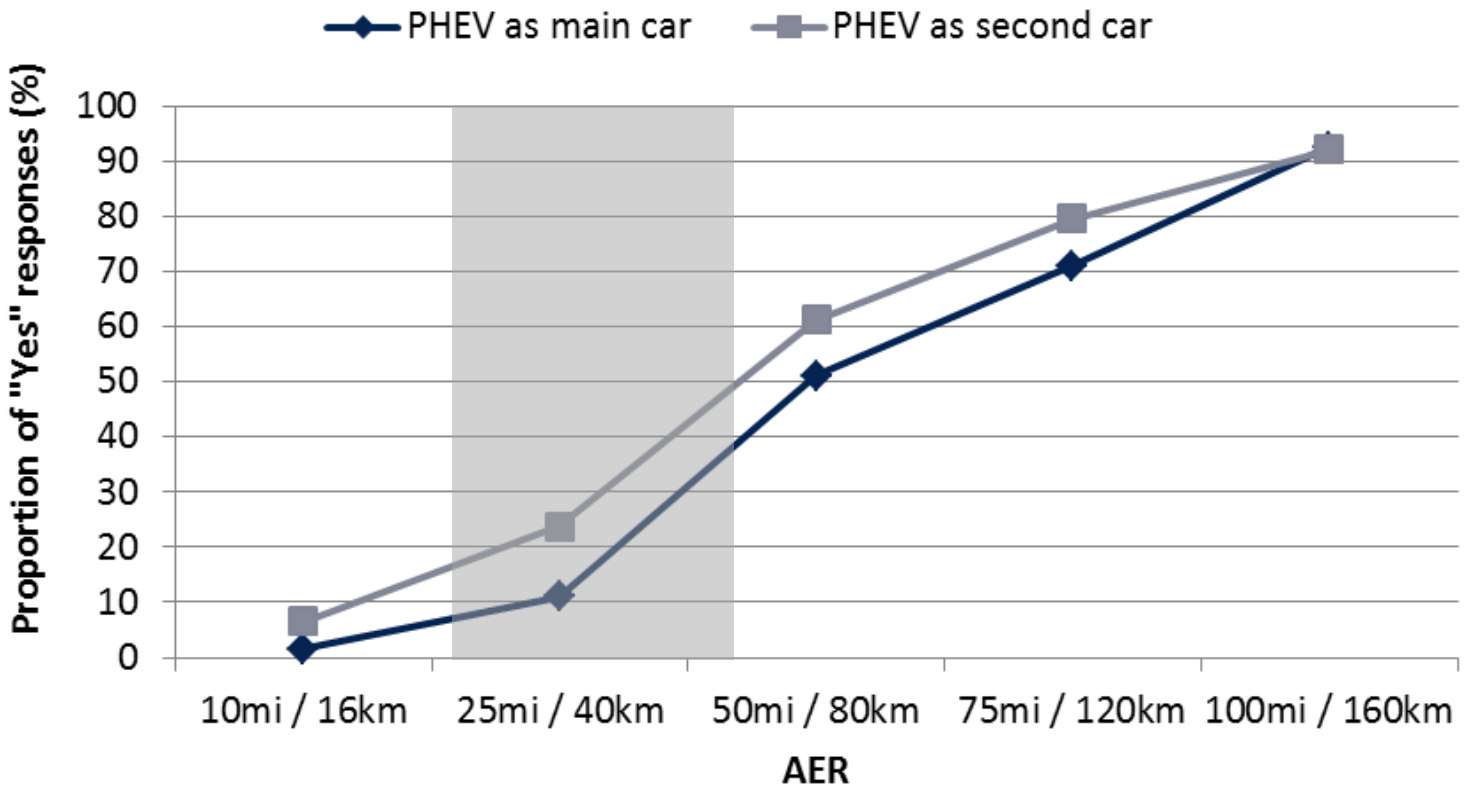

- Hyundai Ioniq PHEV: 39 miles
- Toyota Prius Plug-in: 39 miles
- Kia Niro PHEV: 36 miles
- Mercedes-Benz E300e: 31 miles
- VW Golf GTE: 31 miles
- VW Passat GTE: 31 miles
- Mitsubishi Outlander: 28 miles
- Volvo XC60 PHEV: 29 miles
- Volvo V90 PHEV: 29 miles
- BMW 330e: 25 miles

➢ Majority PHEV models around 30mi AER – improvements will increase appeal

Source: nextgreencar.com

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What can we do to encourage the market?

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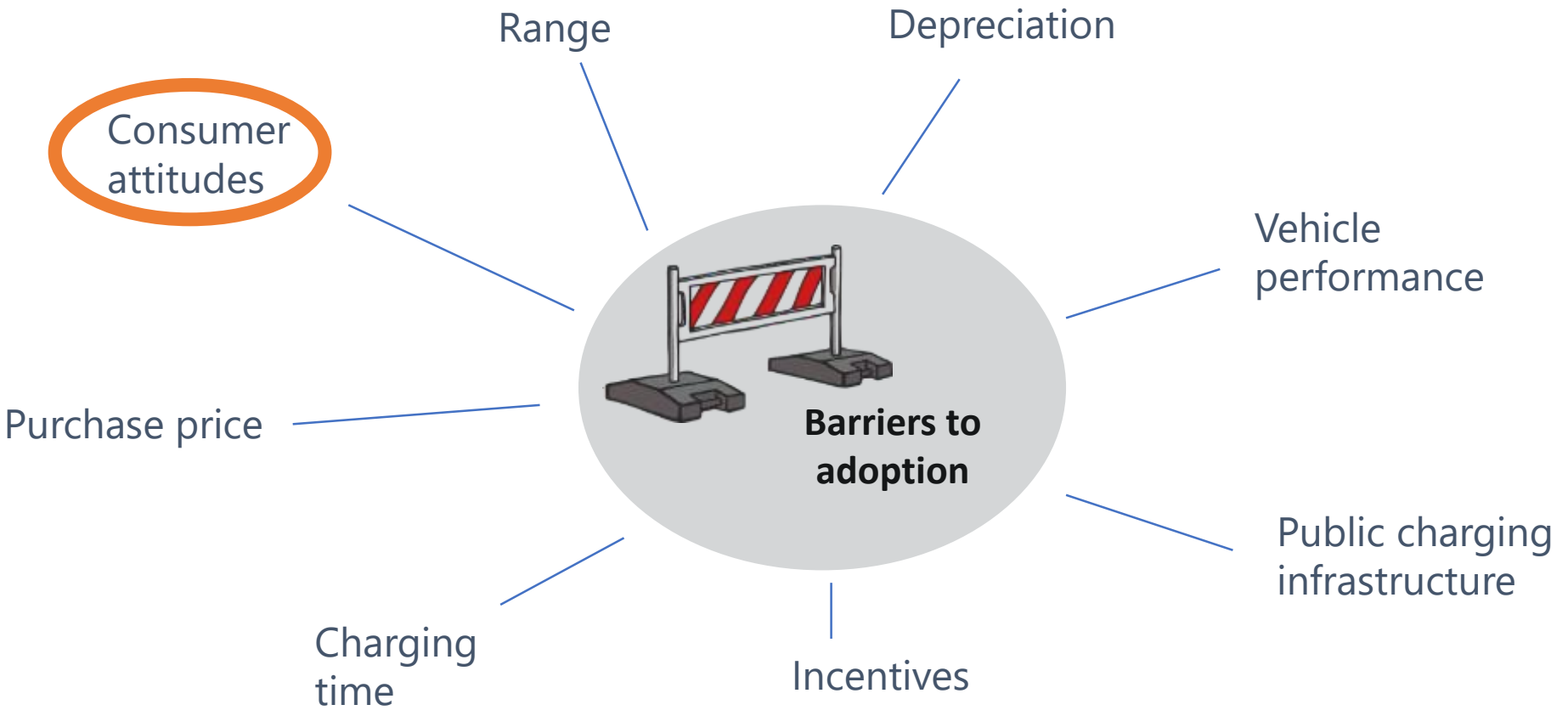

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Experience with EVs matters

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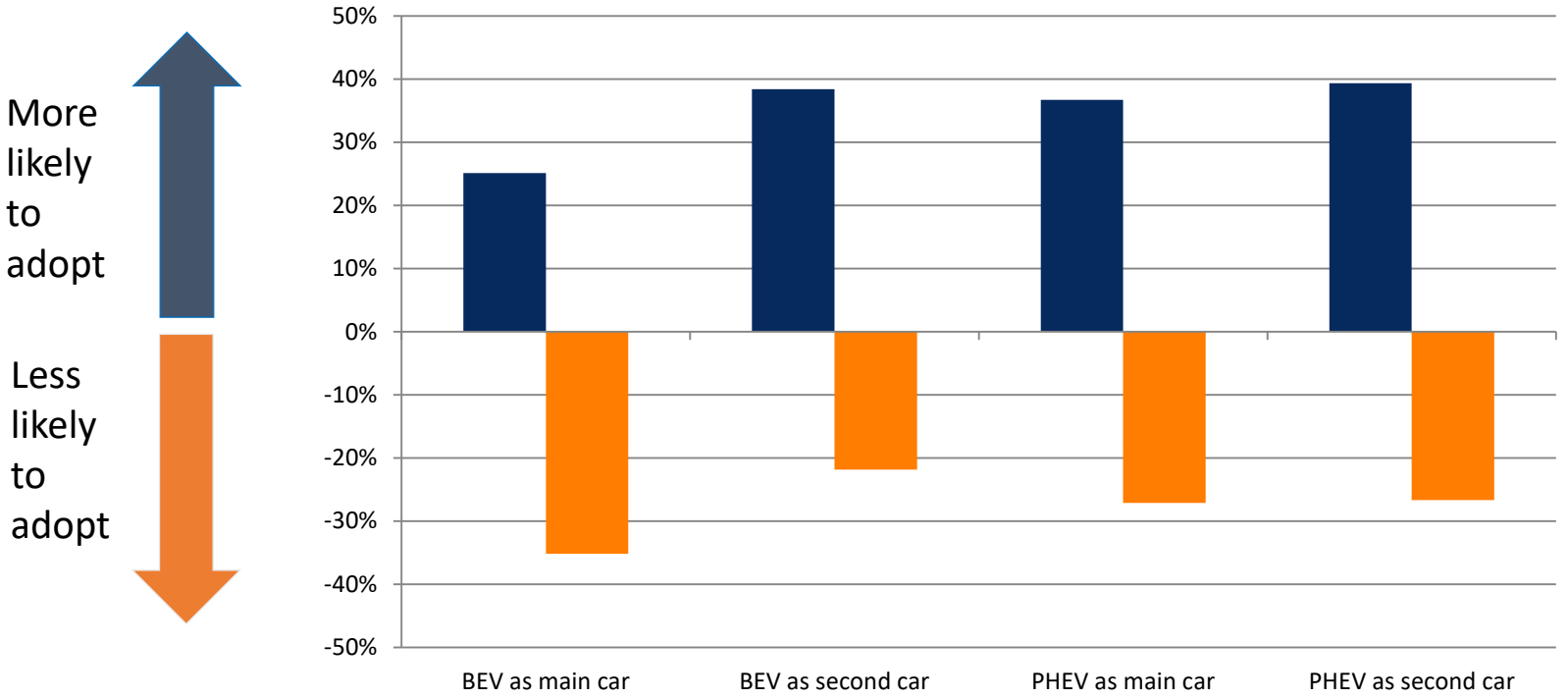
Proportion of consumers who became more or less likely to purchase EVs after experience



- Experience with EVs had a material effect on likelihood to purchase
- Opinions were polarised
- Experience matters; most positive shifts for BEVs as second car
- This is important for understanding likely EV market in next 5 years

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Further work required to understand consumer motivations

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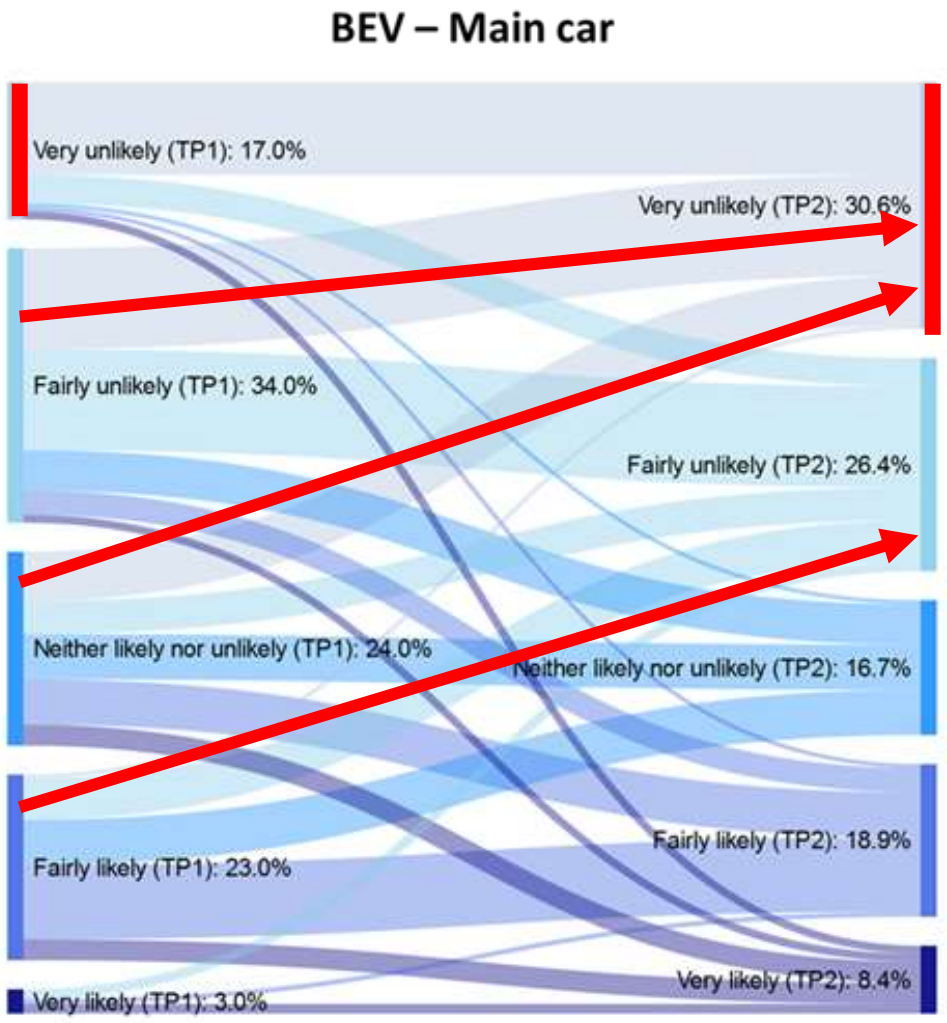

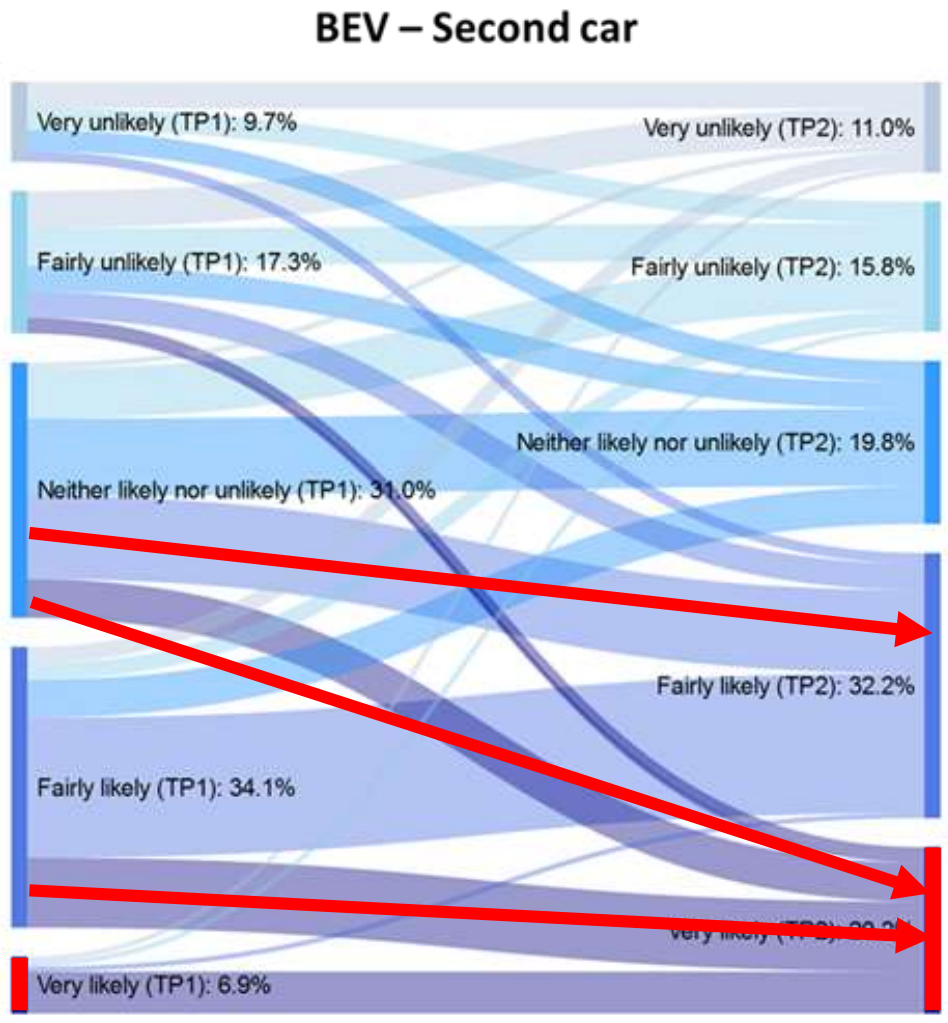

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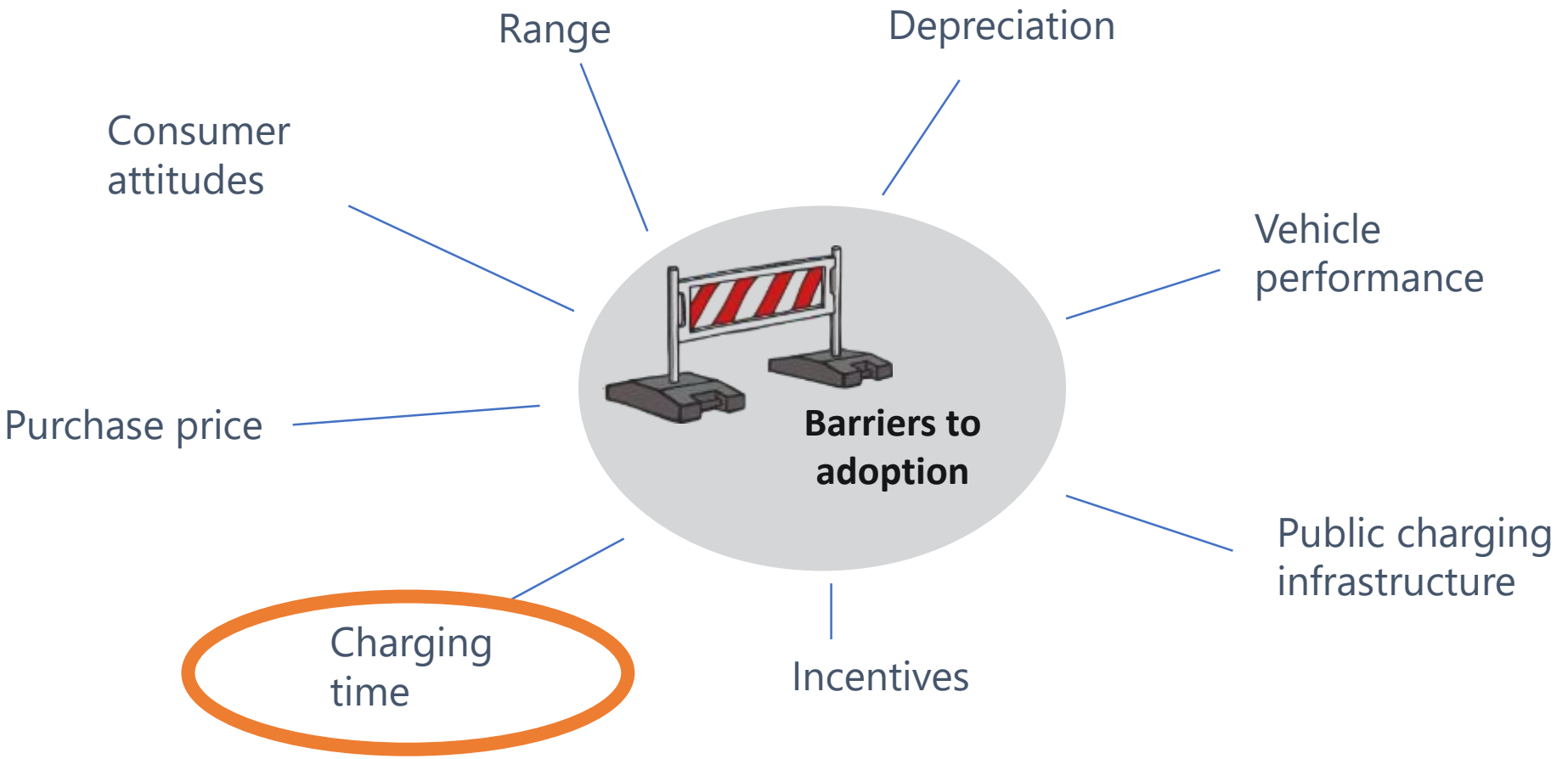

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7.2 kW home chargers provide charge times broadly acceptable for mass-market

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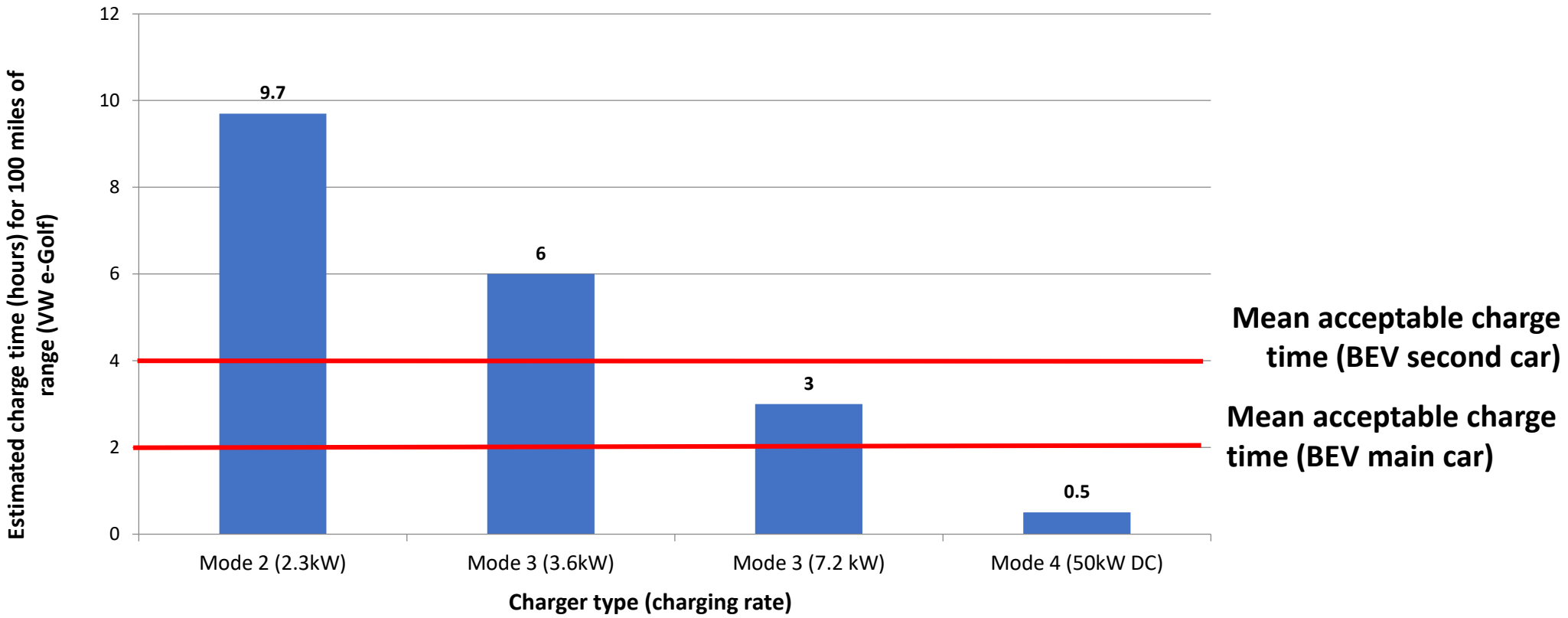

- Important to consider compatibility of homes with 7.2kW chargers, including on-street charging

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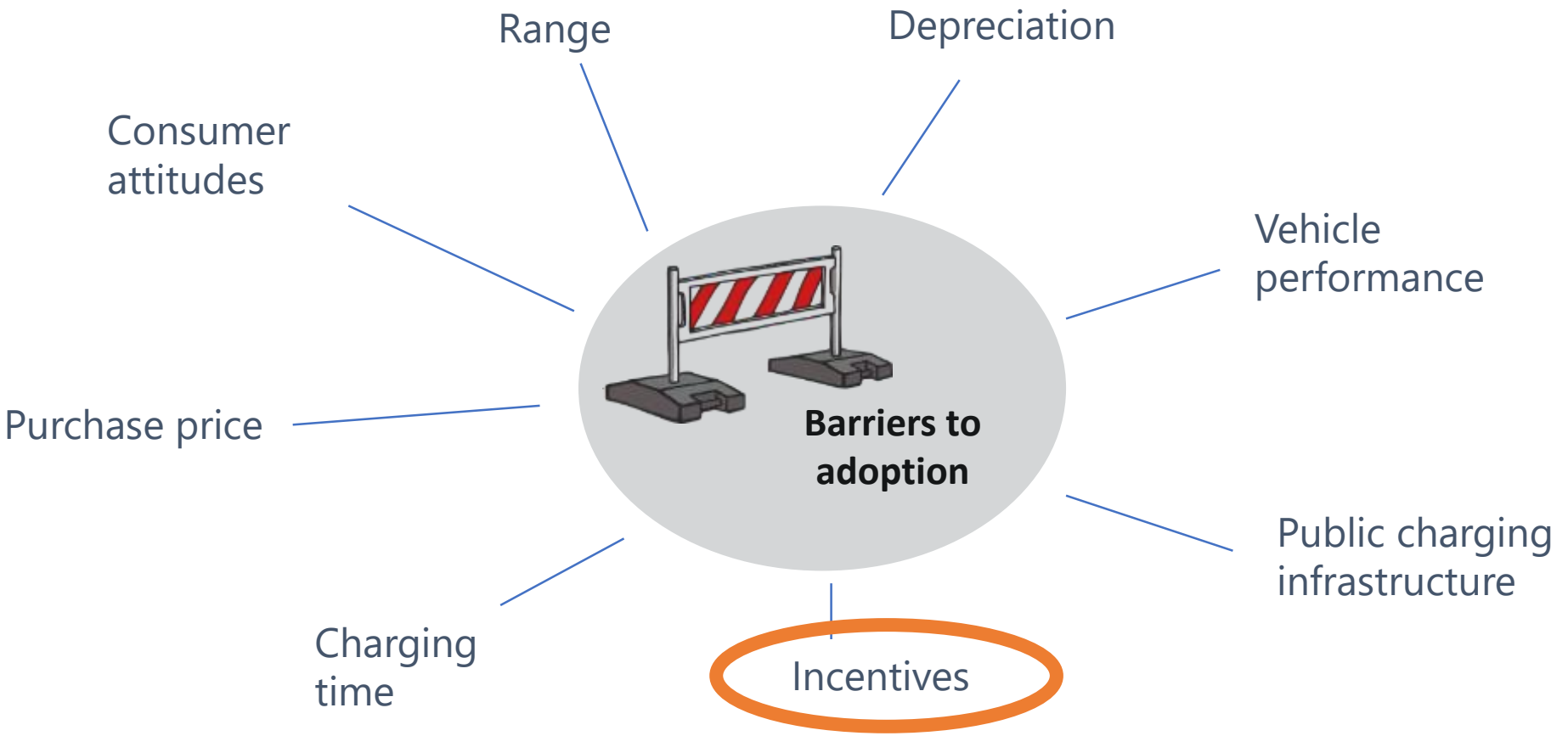

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Financial incentives have greatest impact on adoption

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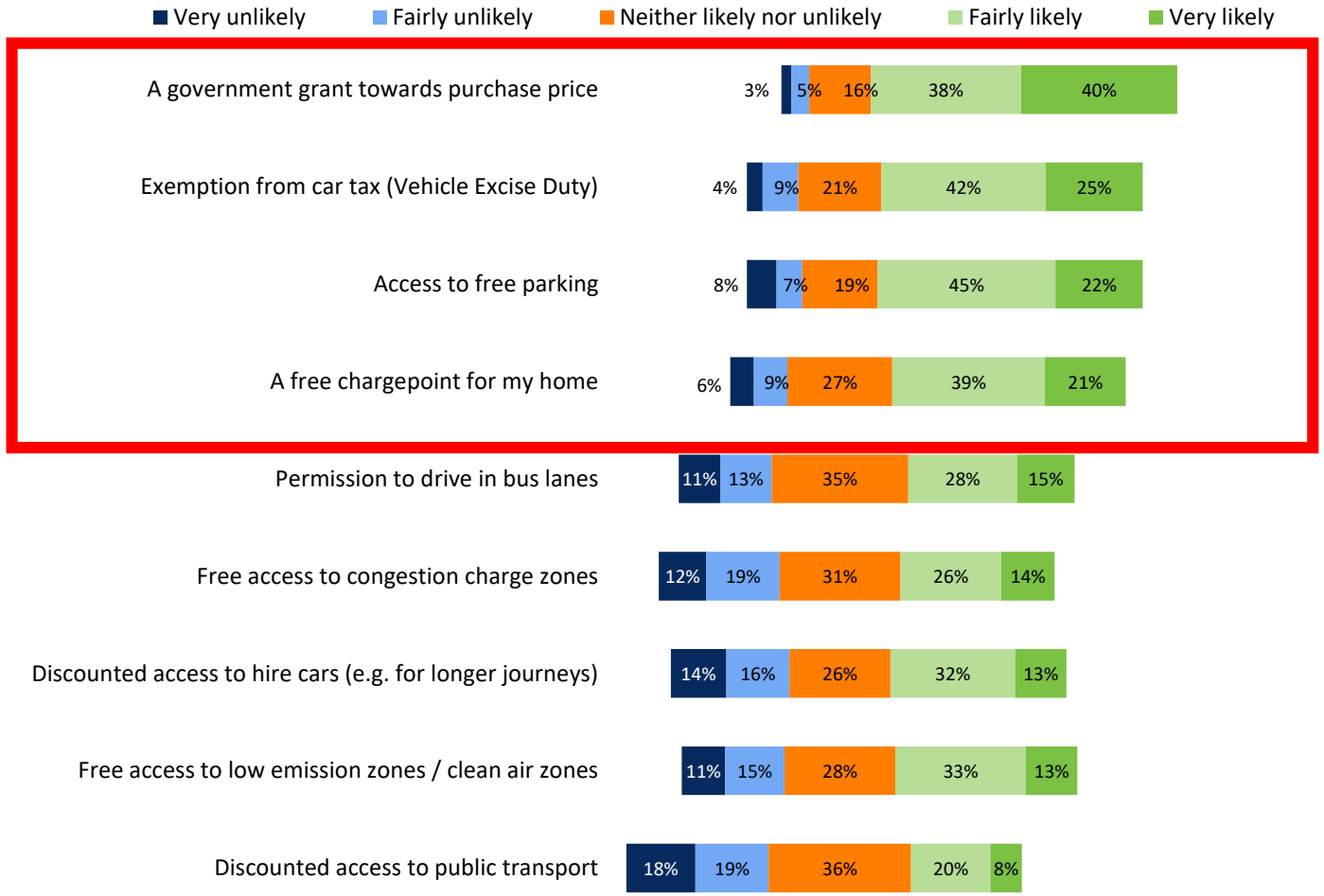

Proportion of consumers willing to adopt a BEV by incentive type

- Top 4 finance related; related to reducing cost of ownership
- Government grant rated as most important for adoption

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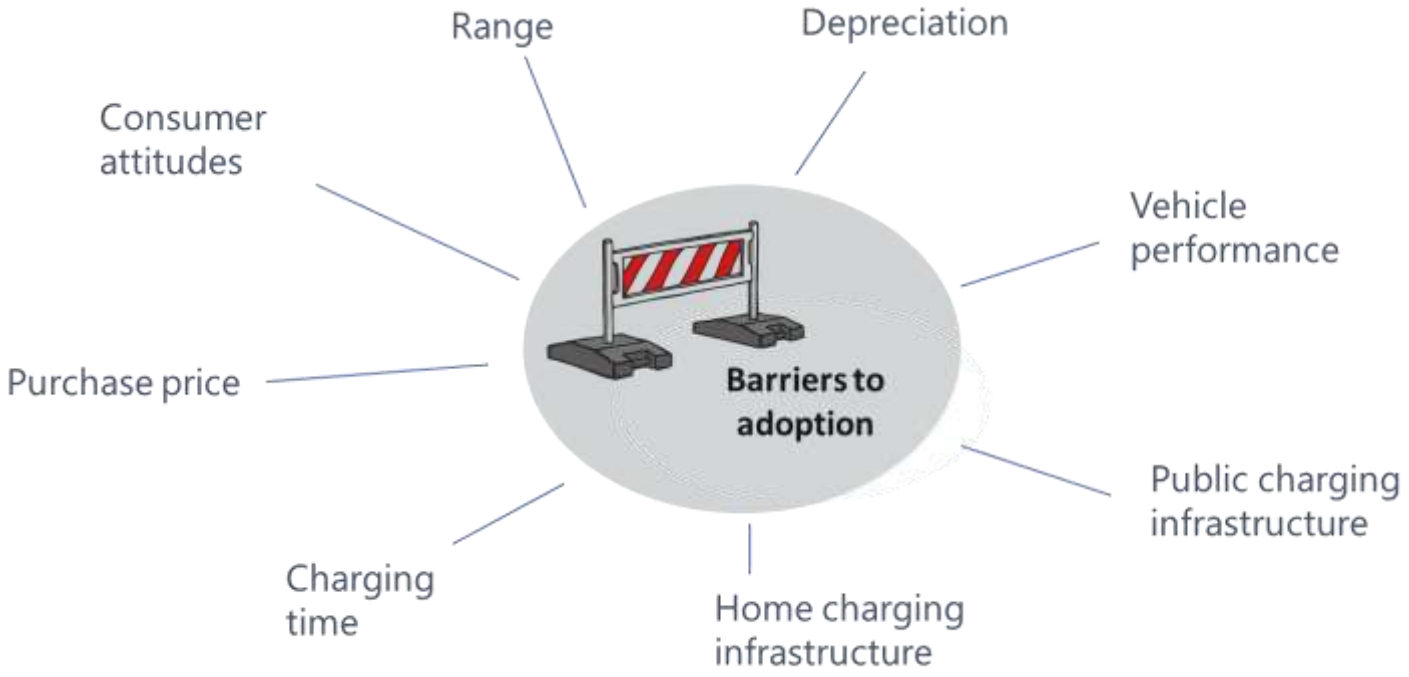

- Full details in the published Uptake Trial report
  - "Deliverable D5.2"

https://trl.co.uk/consumers-vehicles-and-energy-integration-project-cvei

or

https://www.eti.co.uk/programmes/transport-ldv/consumers-vehicles-and-energy-integration-cvei

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Summary

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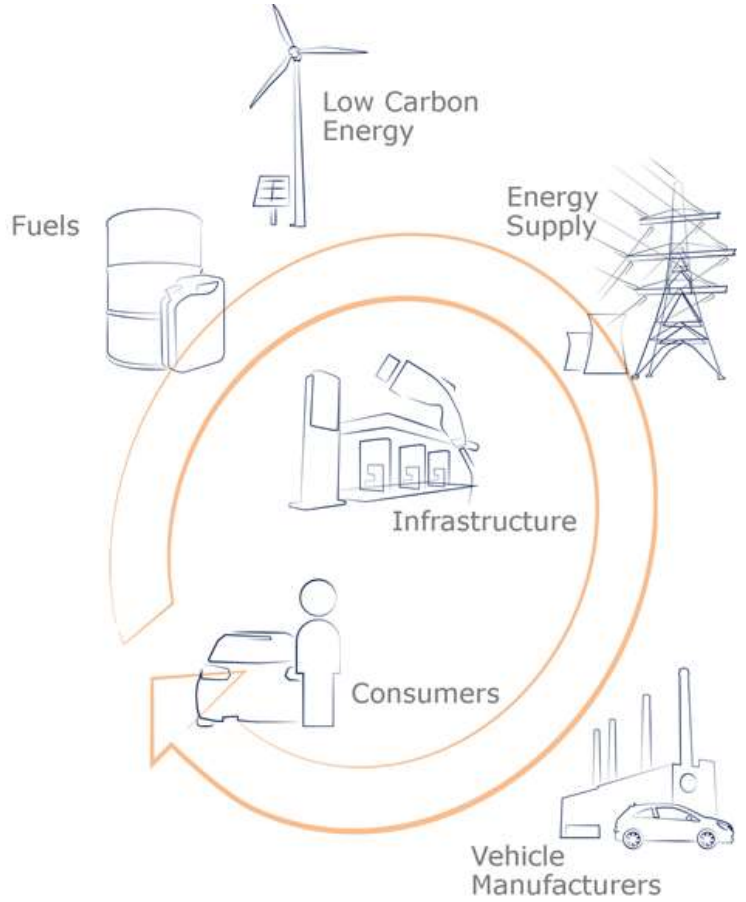
- Electrification of vehicle parc requires understanding mass market motivations
- Positive outlook in the next five years, but…
- Range ‘wants’ versus ‘needs’ must be addressed
- Barriers to adoption need to be managed (e.g. upfront cost, uncertainty, charging infrastructure)
- Providing positive experiences likely to be beneficial
- But deeper understanding of consumer motivations is necessary for EVs to appeal to all of the mass market in time to meet targets



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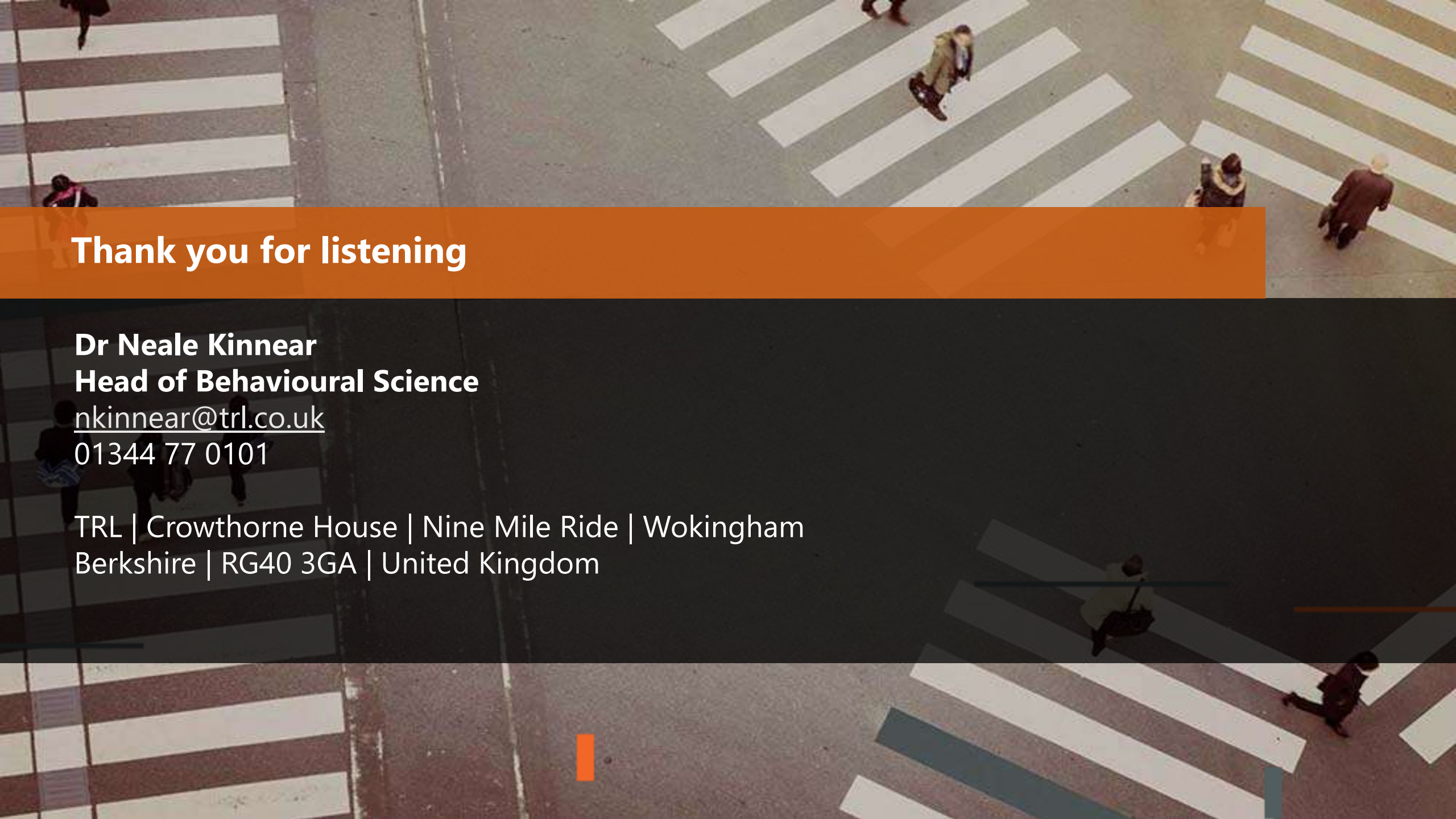

Thank you for listening

Dr Neale Kinnear
Head of Behavioural Science
nkinnear@trl.co.uk
01344 77 0101

TRL | Crowthorne House | Nine Mile Ride | Wokingham
Berkshire | RG40 3GA | United Kingdom