Reducing Barriers to Electric Vehicle (EV) Uptake
A behavioural insights analysis and review

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NZ is EV Ready!

- NZ one of the most EV ready countries
  - Around 80% of electricity from renewable sources
  - More than 85% of homes have off-street parking to easily charge EVs

- In spite of opportunities for EVs, there are many barriers to uptake
  - Driving range
  - Charging infrastructure
  - High purchase price
Our Behavioural Insights Approach

**Barrier** to electric vehicle uptake collated from transport literature and placed within the New Zealand context

**Biases** behind the barrier are identified and inferred from behavioural insights literature

**Interventions** proposed from behavioural insight and transport literature to reduce biases and potentially overcome barrier
**Barrier: Driving Range**

- EVs typically smaller range than ICEV
- NZ survey found only 39% think EVs satisfy driving needs
- Another NZ survey found cars need to travel 350+kms
- But driving range increasing with EVs
- Preferred range wildly exceeds need
- Gap between perceived & real concerns
  - Driving range is psychologically driven
Biases: Driving Range

- Status quo bias appears strongly linked to driving range concerns
- Why? Bias develops from status quo reference point being ICEV range
- Status quo bias shaped by loss aversion
- Why? Buyers comparing EVs with ICEVs will see shorter range as a loss

The concept of loss aversion is certainly the most significant contribution of psychology to behavioral economics.

— Daniel Kahneman —
Interventions: Driving Range

• Perspective taking & widening context can reduce loss aversion
  • e.g. instead of focusing on EV purchase in isolation, buyers could be reminded that if they own a ICEV they can use that for longer trips

• Alternatively could reframe reference point to actual needs
  • Driving experience with EVs can help reframe reference point to actual needs
  • Approaches to increase driving experience of EVs include ride-and-drive activities
Barrier: High Purchase Price

• Upfront purchase price is consistently identified as the biggest barrier preventing EV uptake

• However, recent studies and improving economics show that despite a higher upfront purchase price, lower EV running costs (30 cents per litre) make total ownership or lifetime costs similar.
  • EVs prices are falling

• A potential barrier also related to upfront purchase price is the character of the vehicle market in New Zealand
Biases: myopia and sunk cost fallacy

- **Myopia** (short-sightedness) grounded on **hyperbolic discounting**

- People tend to hold onto vehicles when they should be replaced due to the **sunk cost fallacy**
Interventions:

Research indicates that there are various interventions that can reduce myopia

- US EPA – online labelling and vehicle purchasing trends

Effective labelling scales:

- Clothes dryers in the UK (London Economics, 2014)
- Israeli Ministry of Environmental Protection (OECD, 2017)
Some Final Thoughts

• Key barriers to EV uptake are largely psychologically driven
  • This signifies importance of behavioural insights to address them

• Analysis finds that ICEVs & their 100+ year domination has shaped our preferences

• Approach effective for policy analysis! i.e. barriers > biases > interventions

• Behavioural insights has long promoted RCTs
  • Critical finding in this work highlights driving experience important to reducing barriers
  • RCT on NZ driving experience could be very beneficial