The ‘mpg paradox’.
Why car purchasers say they care about fuel economy, but don’t

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Presentation outline

1. What is the ‘mpg paradox’?
2. Results of qualitative research into car purchasing behaviour in the UK
3. Policy implications
In the UK:

- People think about fuel consumption in terms of MILES per gallon (mpg), not LITRES per 100km (l/100km).
- Fuel is sold in LITRES.
- Road signs are in MILES.
- Annual car circulation tax (VED) is tied to grammes CO₂/KILOMETER (g CO₂/km).

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\begin{align*}
1 \text{ (imperial) gallon} & = 4.4 \text{ litres} \\
1 \text{ mile} & = 1.6 \text{ kilometres} \\
30 \text{ mpg} & = 9.4 \text{ l/100km}
\end{align*}
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The ‘mpg paradox’

Mpg is reported by car drivers to be a key factor. In reality little effort is made to compare fuel consumption data. (Lane, 2005)

- Why?
  - Buyers assume similar ‘mpg’ for all cars within a class.
  - Buyers have little confidence in official mpg figures.
  - Buyers believe improving mpg compromises performance and safety.
  - Costs are too complex to compute (p/litre -> mpg -> p/mile).
  - Private motorists use a high private discount rate.
Recent shifts in the car market - UK

The first 6 months of 2008 - “biggest drop in new car CO2 on record” (-3.6% yr on yr) (SMMT)

Average new car $CO_2$ $\text{CO}_2$ (g/km)

In the first quarter of 2008, the price of petrol at the pump increased 25% (from 96p per litre to 120 ppl)
Recent shifts in the car market - ACEA

New car CO₂ emissions fell 20% during 2008, with the average around 154g CO₂/km (ACEA)

Research questions

- How important is fuel economy within the car purchase decision?
- What explains any gap between reported importance attached to fuel economy and its actual importance?
- To what extent are fuel costs analysed in a systematic way before, during and after car purchase?
- How important is CO₂ information? Is CO₂ becoming an important metric in its own right?
- What are the implications for policy designed to influence car purchasing behaviour?
Methodology

- May – July 2008
- 28 semi-structured in-depth interviews
- people who had bought a car in the previous 3 months
- 13 new cars
- 15 used (post-2001) (5 by trading in another vehicle)
- Aberdeen, Bristol and London

Sample
- New cars - super-minis overrepresented; range £7,000 and £20,000
- Used cars - dual purpose and multi-purpose overrepresented; range £2,500 and £14,000

The ‘mpg paradox’ still exists

“Off the top of my head I can’t remember what the fuel economy was, but it is quite good … it was at least as good as anything else, and certainly in terms of the way I work out fuel efficiency is how much petrol I put [in], in a week”

- People are increasingly talking about mpg … and increasingly purchasing lower carbon vehicles …
- … but it is not the mpg metric which is influencing behaviour - it is simply the cost to fill up the tank
- Fuel economy is expressed in monetary terms
- mpg is rarely used to calculate future costs or systematically compare cars
Why the shift in behaviour?

“I was doing, what, £26 a month. Now, I’m doing, like, £40, lately, I think, because the price has gone up so much, near enough doubled for me….That’s about my limit, I won’t put no more than that in it.”

- Fuel cost was always about filling up the tank - but now consumers are reaching their cost thresholds
- Fuel costs rose by the equivalent of £400 per year in the first six months of 2008
- The speed of this price increase is combined with a squeeze on disposable incomes = step changes in behaviour

‘mpg’ is too complex

“Will I work it out? To be perfectly honest, I think I’d rather take their word for it than work out miles. The other thing is, this thing is always all in litres & kilometres so you’ve got to convert, and I... It’s just too much hassle.”

- Which saves more fuel?:
  - Upgrading from (i) 34mpg to 50mpg (ii) 18mpg to 28mpg?
  - Answer = (ii) - 2.5 times more fuel saved than (i)

- Buyers think in terms of how much it costs to fill the tank
- Many know roughly how many miles they can travel on a tank
- Few know the capacity in gallons of their tank
- Few think in terms of ‘per gallon’, ‘per mile’, or ‘per year’ and virtually none think in litres per 100 kilometre...
**Previous car has greatest influence**

“I just based it on … [the] last car I had”  
“The old car before was throwing out a lot more. So, I think I’ve improved.”

- Previous car is used as primary benchmark for ‘good’ or ‘bad’
- Buyers will settle for cars with only slightly better mpg
- So, where the previous car was old or has poor fuel economy - could lead to poor choices
- This limits the options people consider

**Other simple rules of thumb**

Most assume that the main routes to fuel economy are:

- a smaller car:
  “Because it was a lower engine size it was just common sense overall that it was going to be a lot cheaper to run.”

- … a diesel car:
  “I don’t know much about the other cars, but I would imagine anything that’s diesel would be quite economical.”

- … a new car
  “If we’d had a bigger budget we might have looked at a newer car which would have less CO₂ emissions…”
Best-in-class concept is missed

“... it’s cost effective in comparison to the bigger car. I think all small cars are the same; I don’t think it’s any different... to, you know, a smaller Audi or a smaller Corsa or anything like that; I think it’s a small car. A small car is a small car.”

- Buyers assume that all cars in the same class have roughly the same ‘mpg’
- Buyers are **not aware of** or seeking best-in-class information
- It means once a ballpark mpg figure has been ‘chosen’, it drops out of focus and other things (safety, comfort, ‘curry hooks’, vanity mirrors ...) become more important
Car buyers are not motivated by CO2

“It helps, but it’s not a huge real factor for me, as far as I was concerned. It’s the fuel consumption that was the real biggy…”

“Based over a year, it’s quite negligible.”

- Almost all know that ‘road tax’ is tied to CO₂, but...
- Very few know their VED band, virtually none their CO₂g/km
- Most give reasonably accurate VED cost for this year and next
- Buyers generally aspire to ‘not be in the worst’ categories
- Most are content to pay the same as for their previous car
- Current VED differentials have no discernable influence on choice

Denial

Many believe the existence of gas guzzlers on the road means any car they purchase will be good by comparison:

“It could be better, I know, but I don’t want to think ...about the gases that comes out. It’s not the best in the world but there’s people driving around in big gas guzzlers…”

Others believe they are already offsetting their own fuel use:

“Psychologically, we can offset it a bit ... and we’ve got the caravan, so we don’t go on holidays abroad at the moment, so we’re not flying, jetting off, so you know. Why should we be penalised ...?”
Some believe changing their car makes little difference compared to how much you use it:

“Any car has an impact, it doesn’t matter how badly or how big it is or how much fuel we put in it, we still sit in the road, we’re still using it. It helps a little bit [to get a better car] but all cars are the same.”

Some are starting to save fuel in other ways:

“I find myself thinking, diesel is about £1.40 a gallon now, or £1.40 a litre, whatever it is, and, um... I think, do I need to make that trip? I don’t.”

Symbolic aspects of car choice

“Talking to my friends ... they used phrases like ‘Mazda is a bit of an old man’s car’

- Image can be used to distinguish between otherwise similar cars within a vehicle class
- Instead of asking ‘what can this car do for me’, many ask ‘what does this car say about me’
- No evidence of fuel-efficiency being associated with desirable social characteristics (e.g. modernity or youth)
- Least efficient cars have the highest status
- No single brand is associated with fuel efficiency
- Looks and image may be more important for small cars

...
From ‘mpg paradox’ to ‘mpg mirage’

Why ‘mirage’?
- The mpg metric is only treated superficially in the decision making process
- Buyers only consider a small range of options when considering a more efficient model (smaller, diesel, new)
- Buyers still assume a similar mpg for all cars in their class
- Simple rules of thumb are used to assess ‘good’ and ‘bad’ - especially comparison to previously owned vehicle
- Once a ballpark mpg figure has been ‘chosen’, the issue moves out of focus and other attributes gain importance
- Mpg is too complex to be used to compute on-going costs

Policy implications

The car energy label should:
- downplay mpg and CO2 metrics
- be based on monthly average fuel costs
- include comparative best in class information
- appear on second-hand cars (75% total cars sold)
- be updated to reflect fuel prices & the market;
- take the form of electronic/ web based displays
- Volume based indicators are no good for electric cars ...
- CO2/km no good for lifecycle emissions
Conclusions

- There is still a disconnect between reported importance of mpg and actual influence
- The cost to fill up the tank is the most important metric
- The notion of fuel efficiency remains weak in the process of social or behavioural identity construction
- Fuel economy is not systematically considered - instead, simple rules of thumb are used (previous car, small cars, diesel cars)
- CO2 based fuel tax does not appear to be increasing ‘environmental literacy’