

IET International Hybrid and Electric Vehicle Conference 2014

2014 IET混合动力及电动汽车国际会议



EV trials shaping low carbon transportation in the North East of England

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Where I live



Newcastle.... A great place



Switch EV consortium



Switch EV consortium

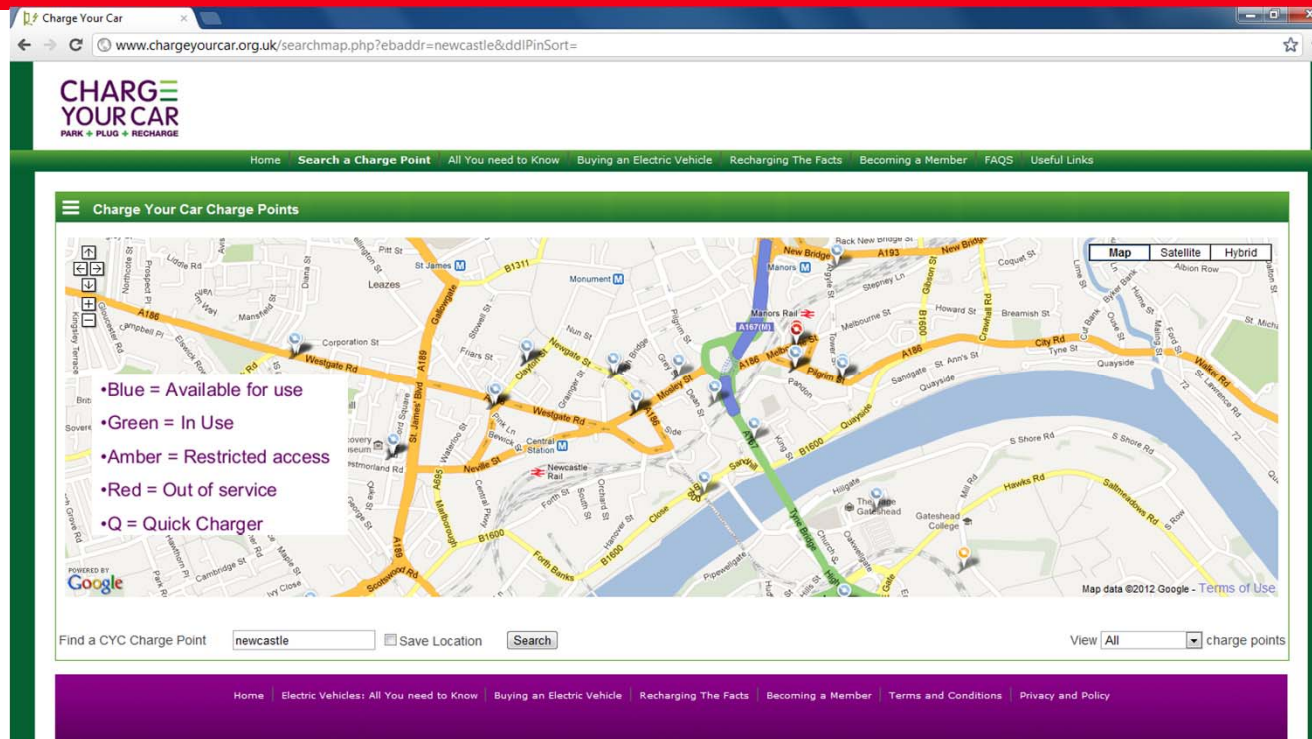


Incentives for the uptake of EVs



- 12 quick charge points
 - 462 public standard points
 - 321 work standard points
 - 401 home charge points
-
- For over 90% of the time driving in the North East, the EV is within 5km of a charging point.
-
- Incentives for the uptake of EVs
 - Plug-in Car/Van Grant
 - Favourable tax regime
 - Exemption for Vehicle Excise Duty and Company Car Tax
 - Infrastructure

Charging Infrastructure: “Charge Your Car”



Until May 2013:

- £100 annual fee
- Access via RFID card
- free electricity
- free parking

From June 2013:

- Pay As You Go
- £3.50 for an unlimited standard charge
- from £5.00 for a 50kW quick charge
- Access via mobile phone app or RFID card



OR



torg

IET
The Knowledge Network





Trial statistics (hard data)

Average journey length:	8.9 km
Longest journey:	132 km
Average journey duration:	14:30 min
Total journey distance:	591,000 km

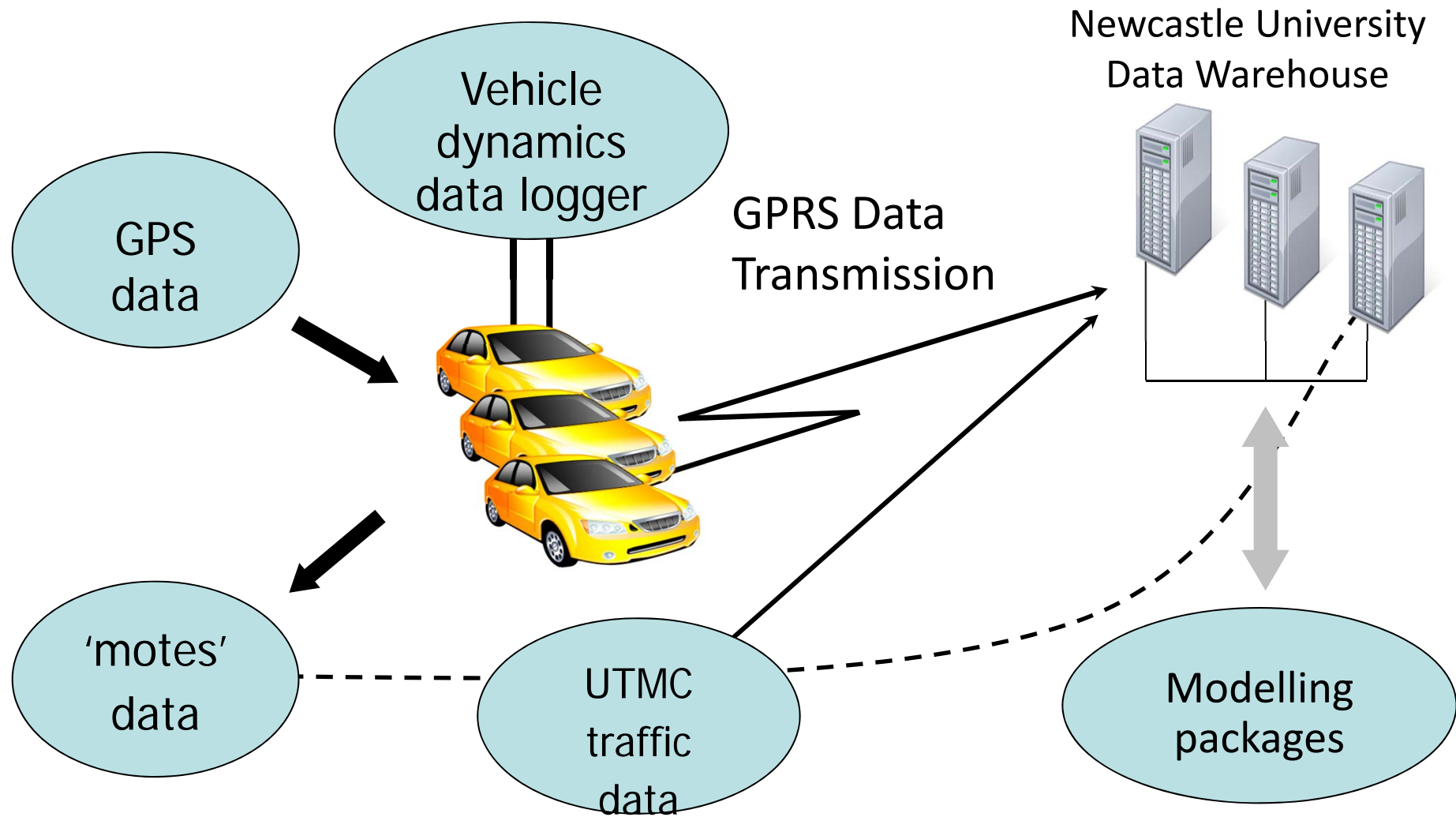


Total number of journeys:	85,000
Total number of charges:	27,000
Total energy transferred:	205 MWh
Total CO ₂ Saved:	103,000 kg CO ₂

Trial started March 2010, end date has been extended to May 2015
193 drivers have used EV's (most for a 6 month period)

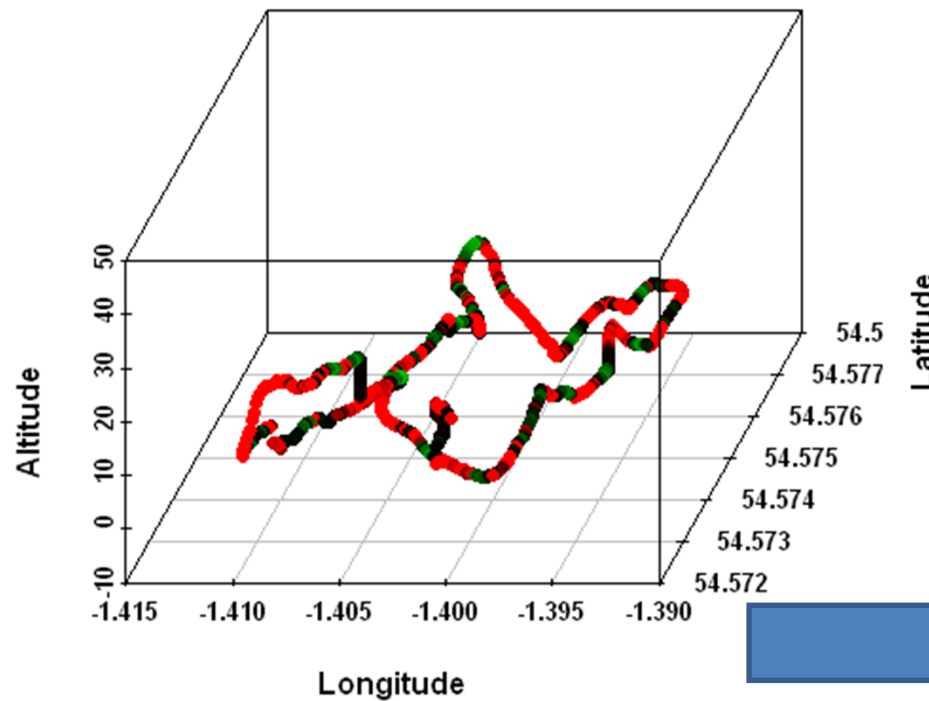
Data from Dec 2010 to May 2014

Data collection, storage & management



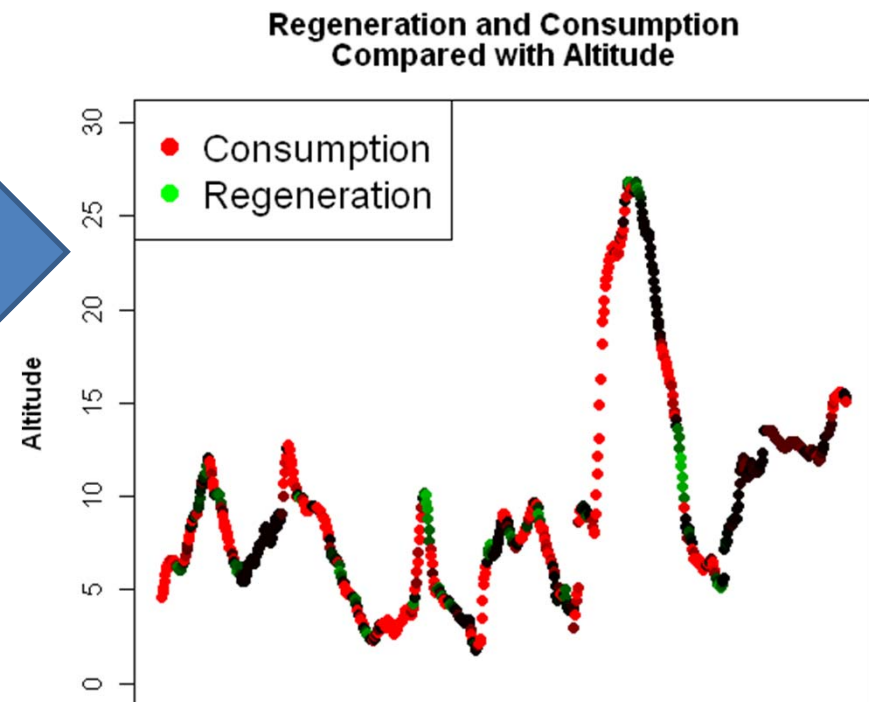
Location, consumption and regeneration 1



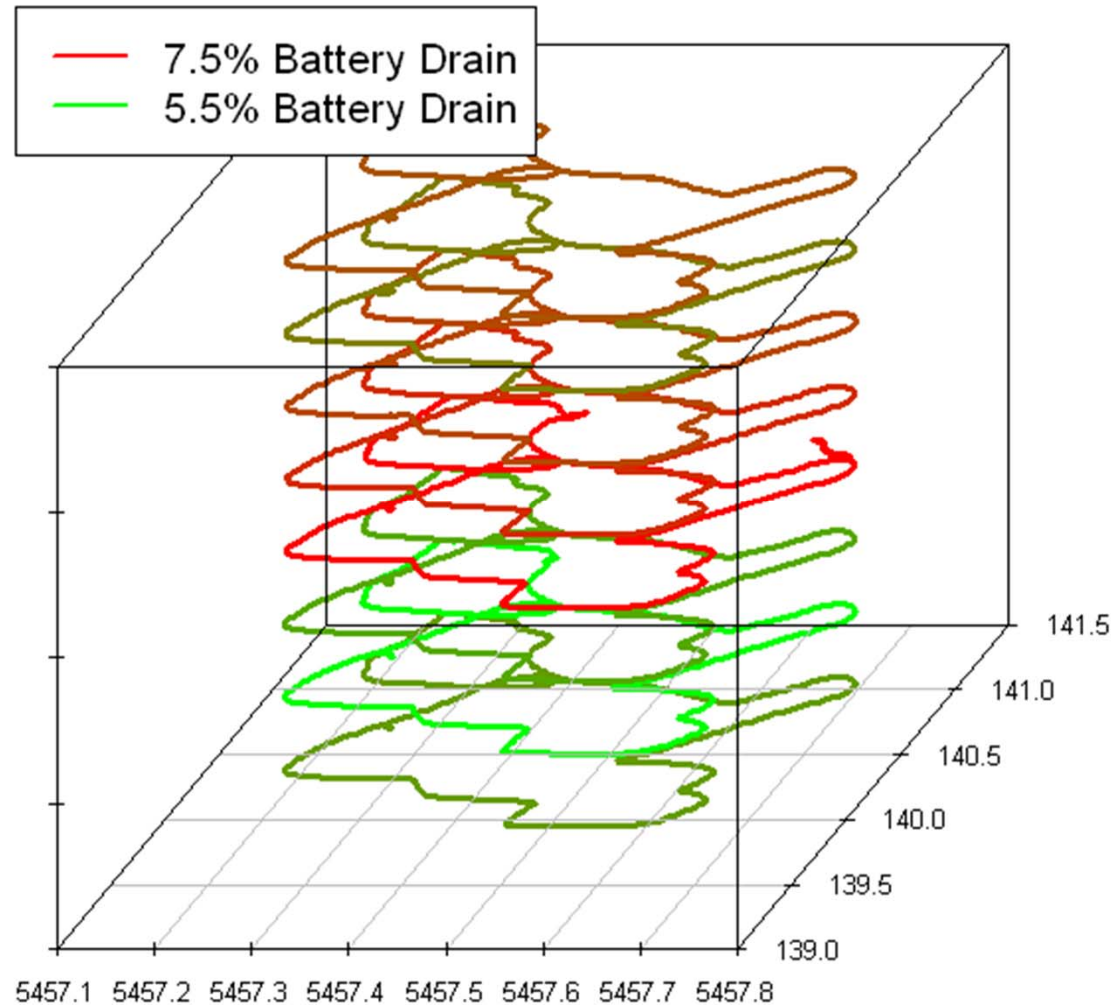


Consumption and regeneration depend not only on the speed and traffic patterns within the journey . . .

. . . but also on the topography of the journey.



Different drivers making the same journey

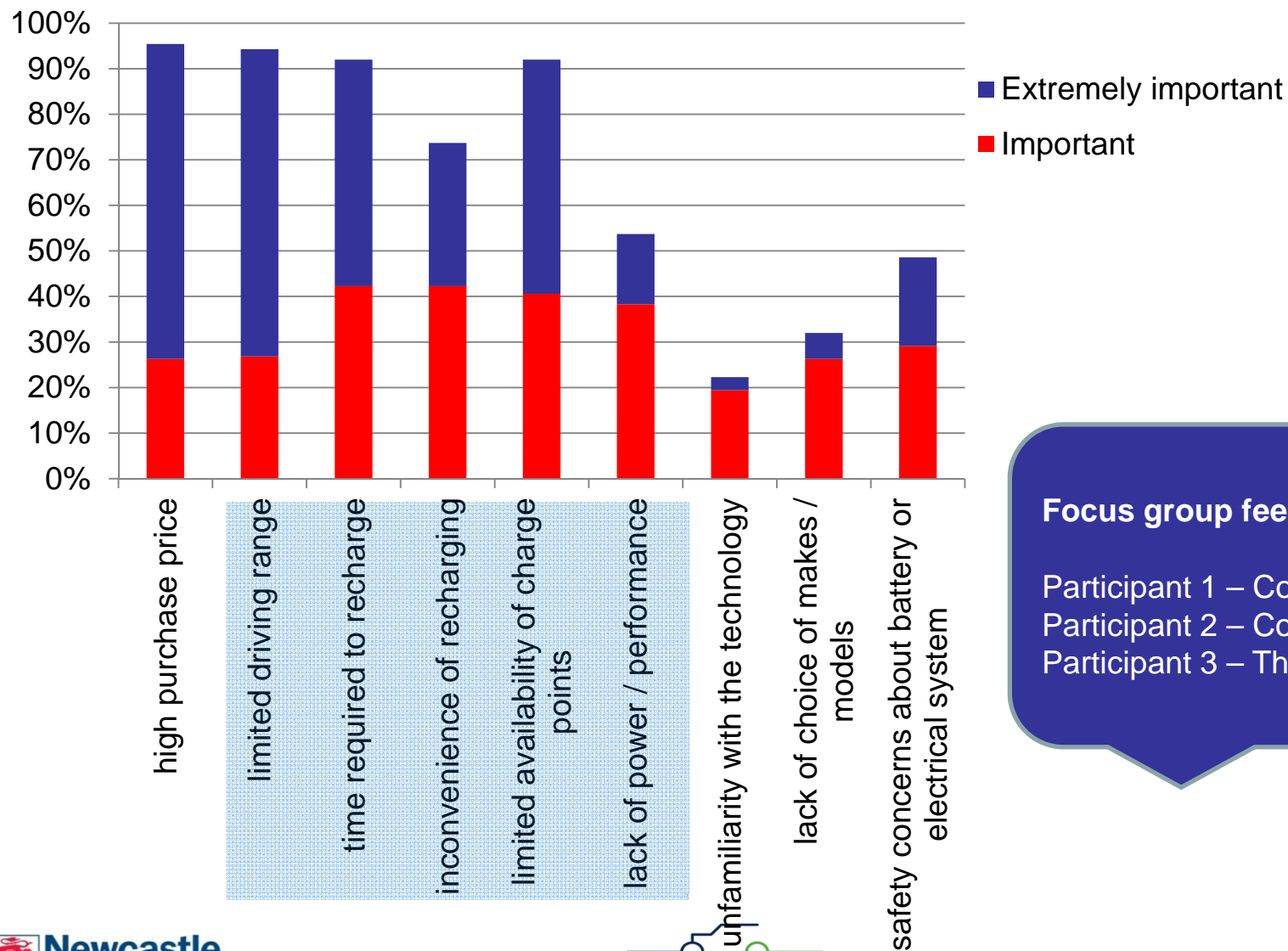


Identical spatial journeys can reveal more about the specifics of driving electric cars and by analysing the data we can start to think about other conclusions

So using this data.....



Possible barriers to EV uptake



Focus group feedback on barriers:

Participant 1 – Cost.
Participant 2 – Cost and battery life.
Participant 3 – The range.

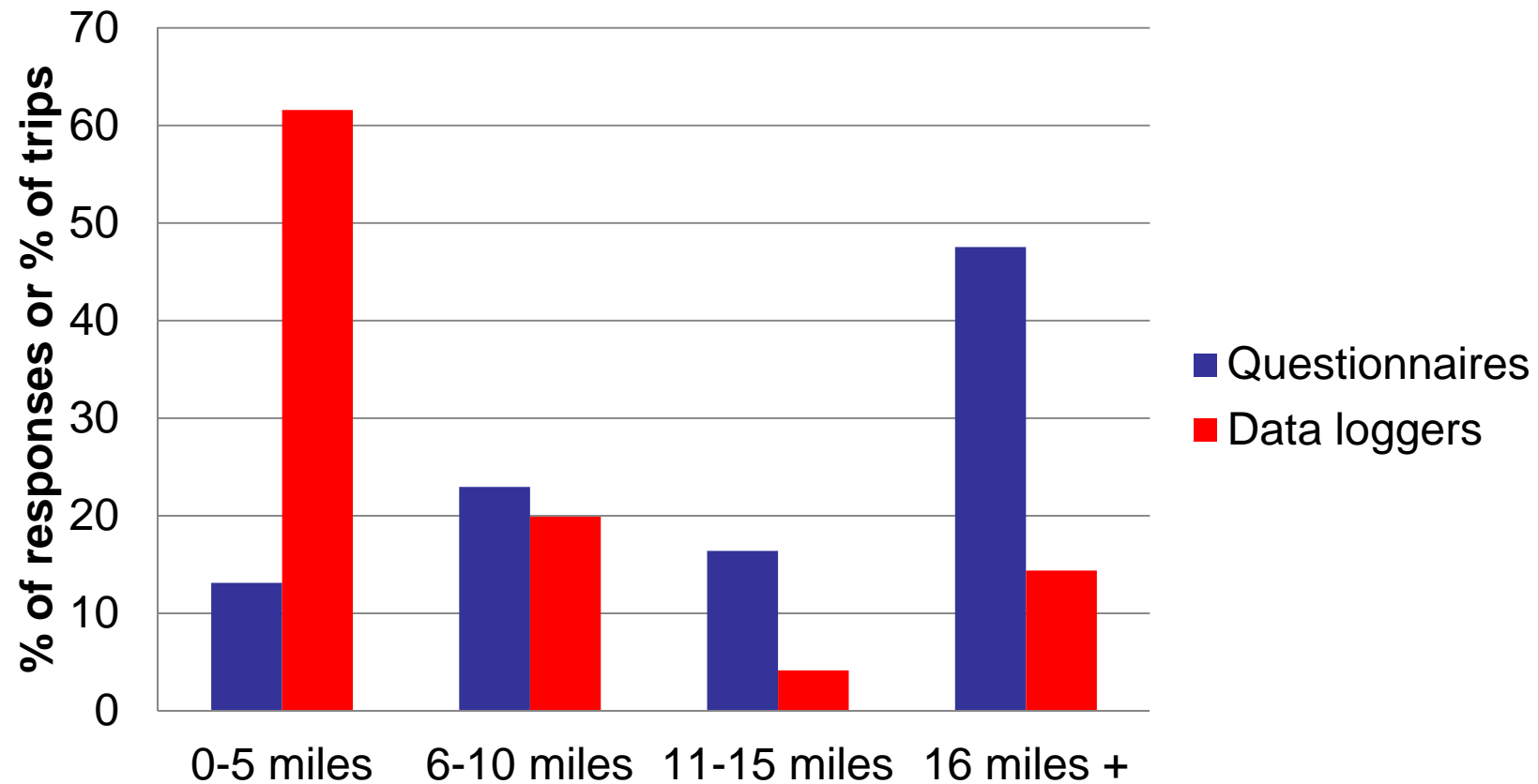
MYTH #1 LIMITED DRIVING RANGE

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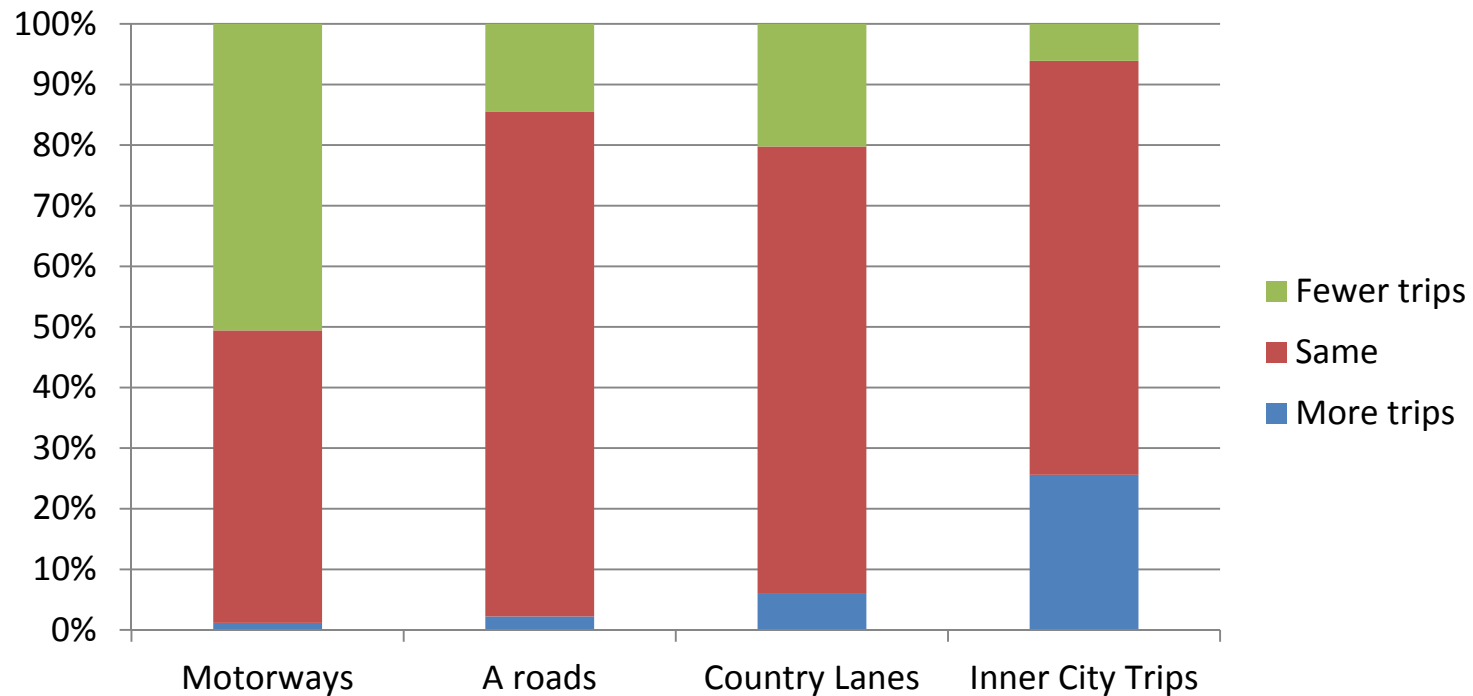


Distance driven



Driving on motorways

Compared to driving a normal, combustion engine car, did you carry out more or less trips on the following roads:



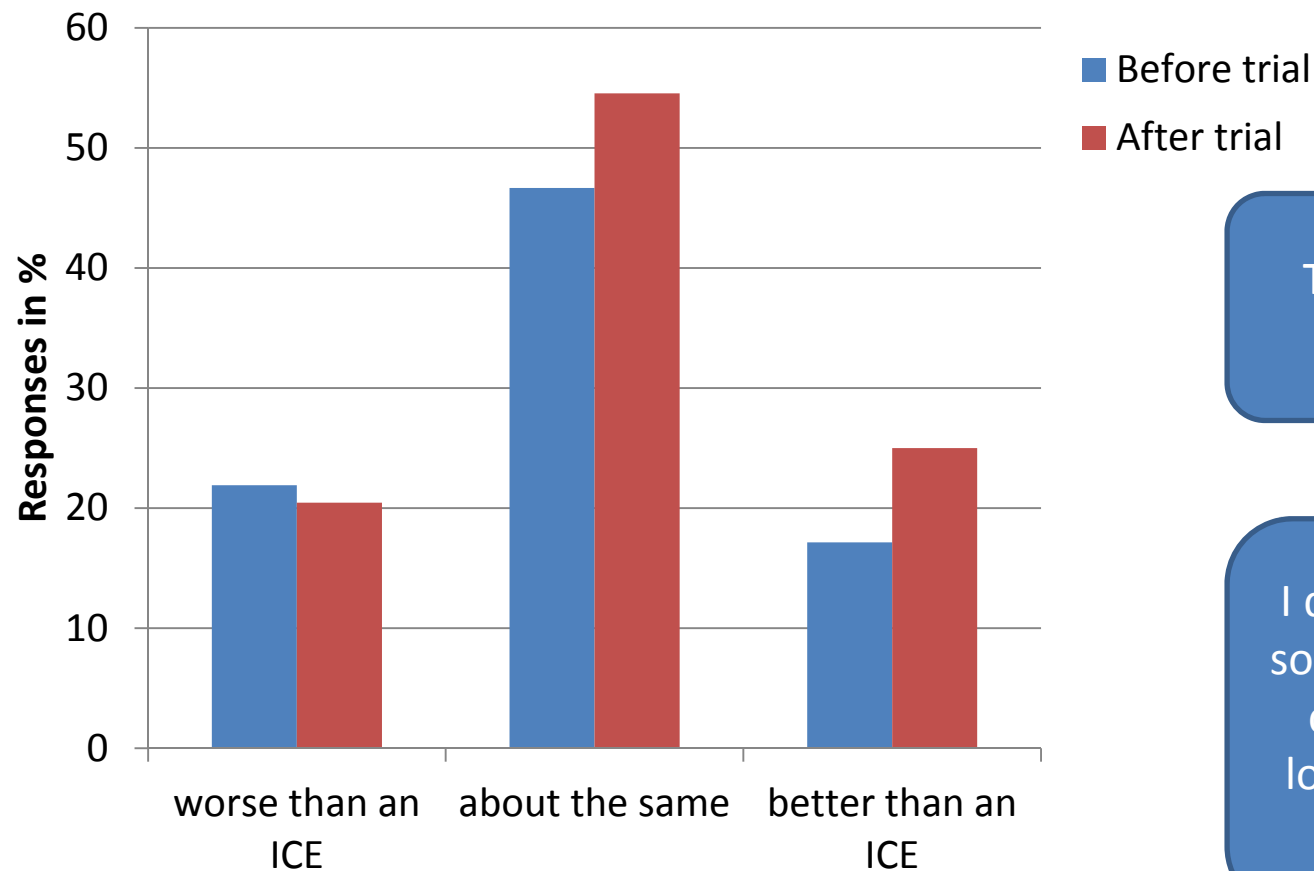
MYTH #2 LACK OF POWER / PERFORMANCE

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How do you expect the *over all experience* of driving the electric car?



There is nothing like guilt free driving

I drive a Mercedes SLK so it's a totally different car from mine and I love driving it. I really do.

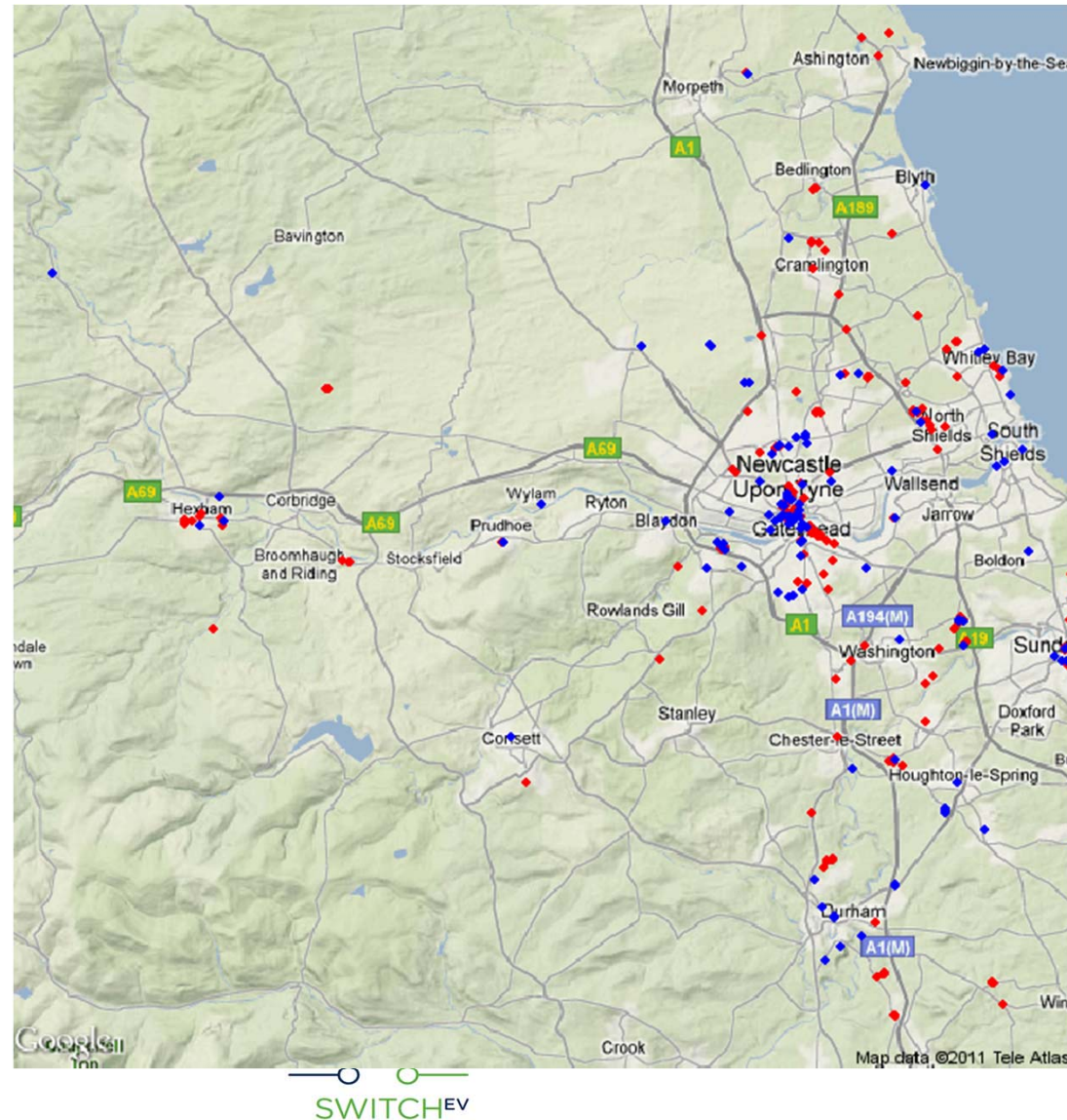
MYTH #3 LIMITED AVAILABILITY OF CHARGE POINTS

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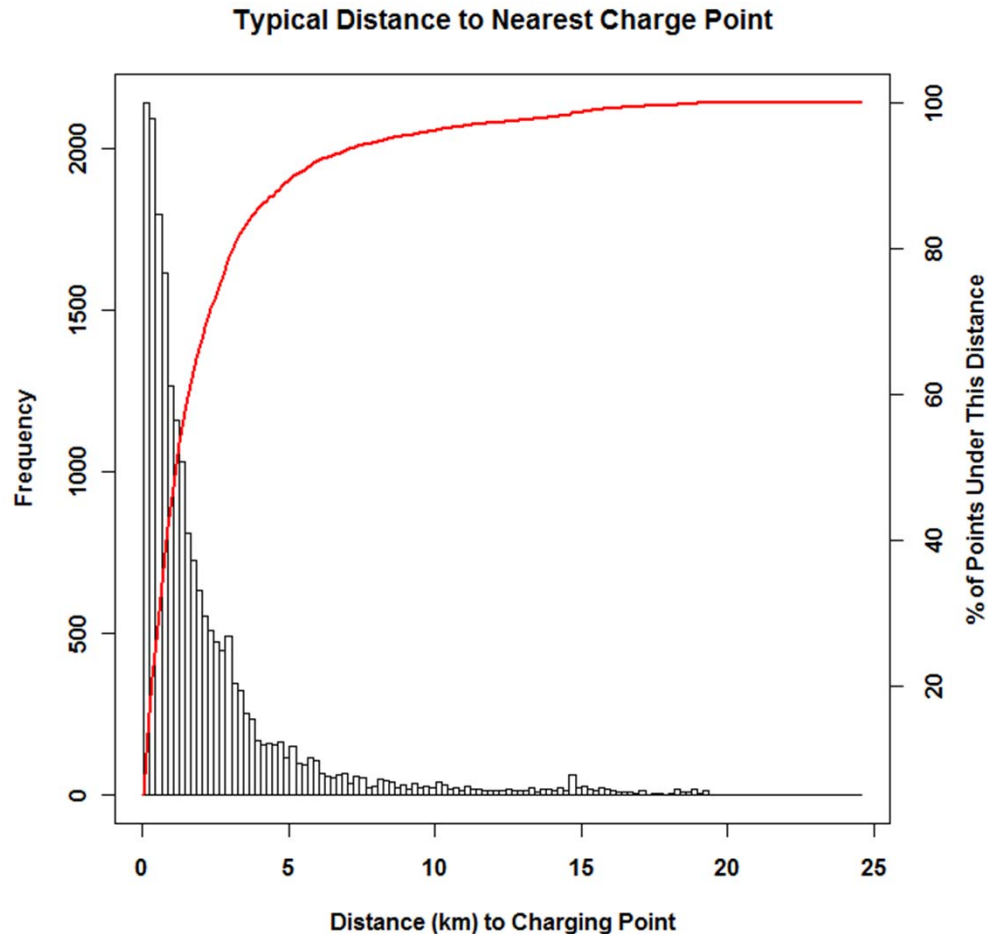
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Charging Events and Charge Locations



Limited availability of charging infrastructure



- What this graph shows is that for over 90% of the time driving in the North East, the EV is within 5km of a charging point.
- The EV is within 15 km of a charge point for more than 99% of the time spent driving

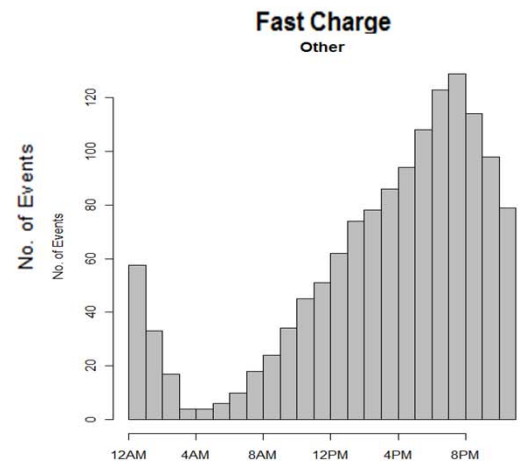
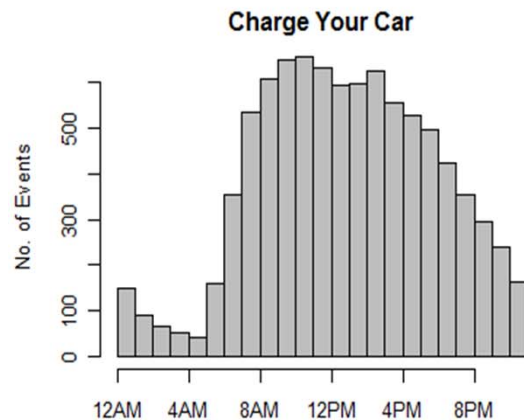
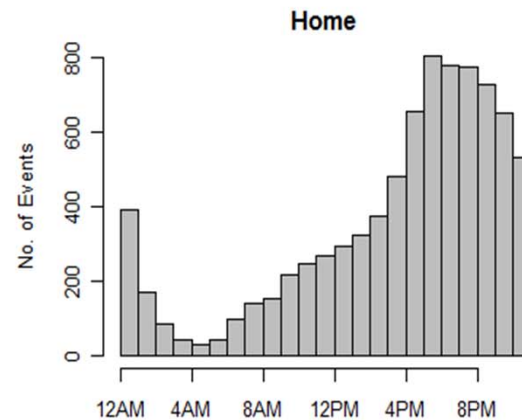
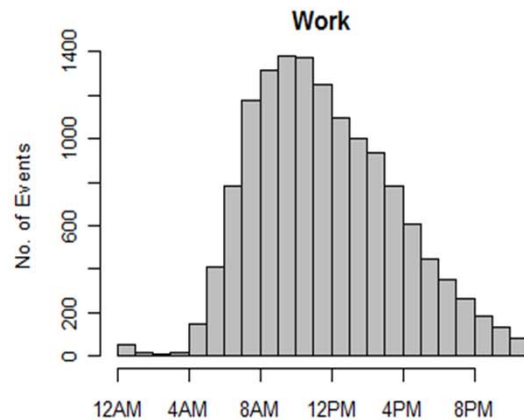
MYTH #4 INCONVENIENCE OF RECHARGING

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Charging events

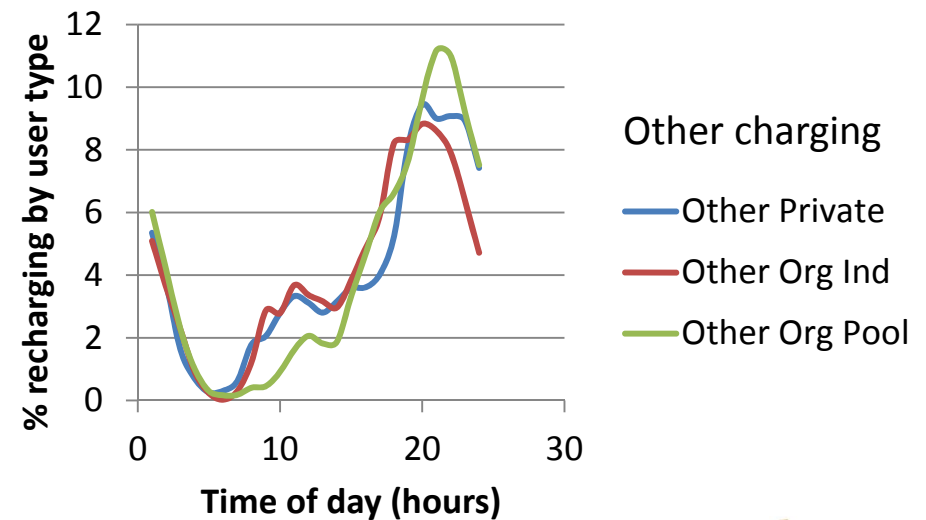
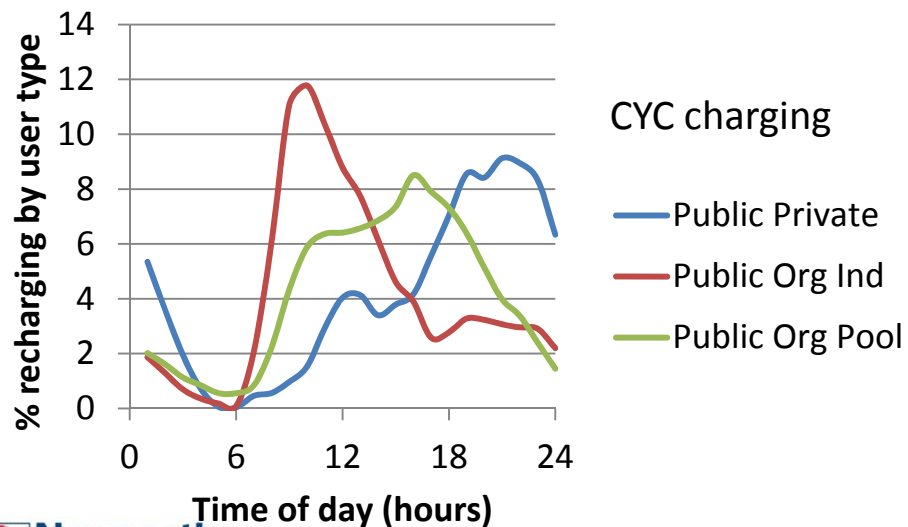
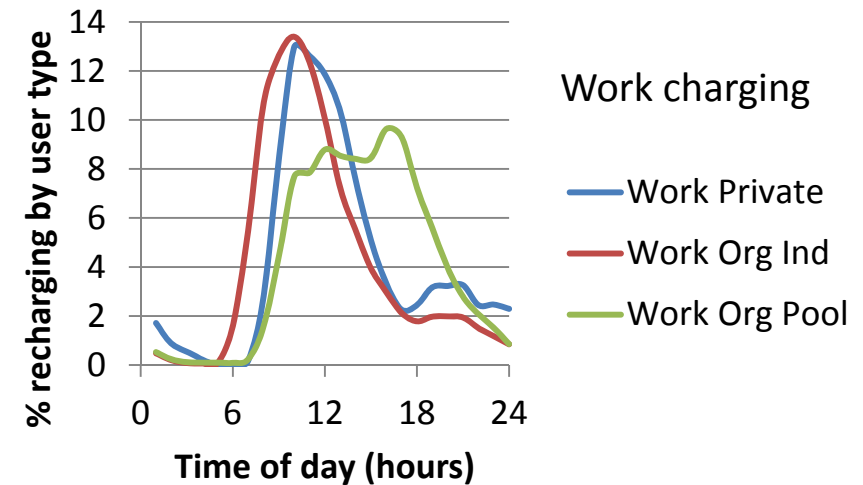
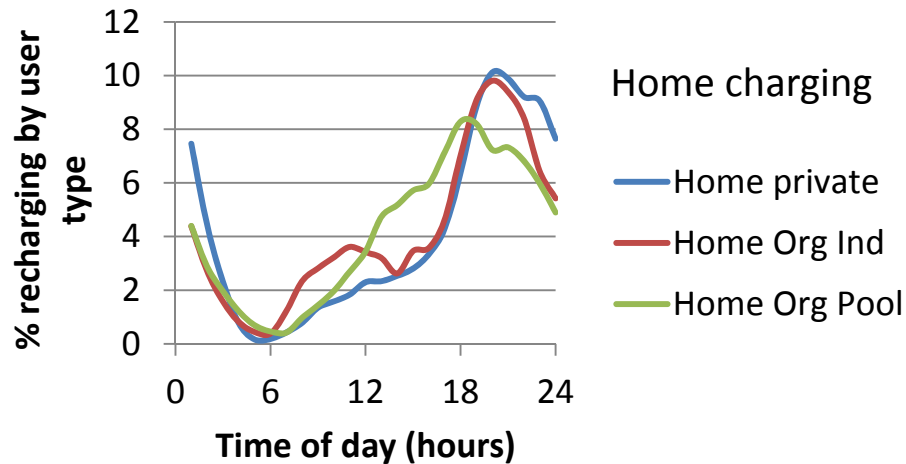


- 'Work', 'Charge Your Car' and 'Fast Charge' all show a similar morning – afternoon charging pattern. 'Home' shows a more pronounced shift towards late afternoon to evening charging.

Charging time required

	Private Vehicle	Organisation Single User	Organisation Fleet
Average Charging Duration	02:43:08	03:36:57	02:10:39
Average Charge Transferred Per Charge	1.44	2.06	2.16

Charging profiles at different locations



OTHER MYTHS...

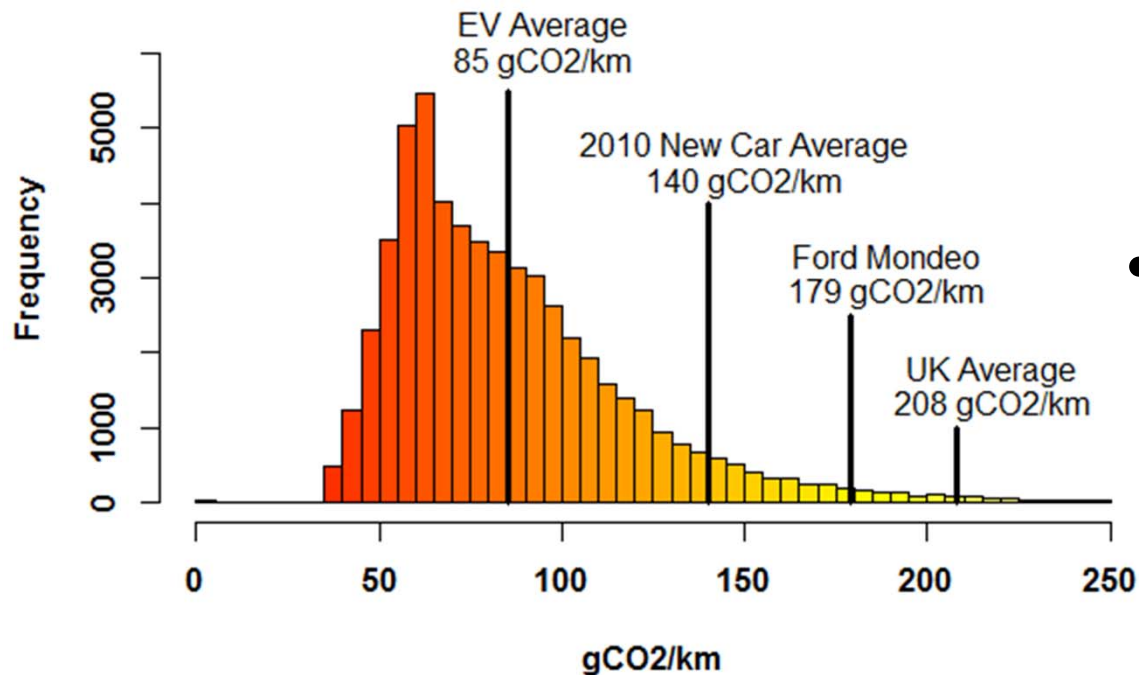
THE ENVIRONMENTAL IMPACT OF EVS

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Efficiency of an EV



- Although on average it is more efficient, there is a wide variety of efficiencies
- We need to know what behaviour is driving this...

So have the policies worked?

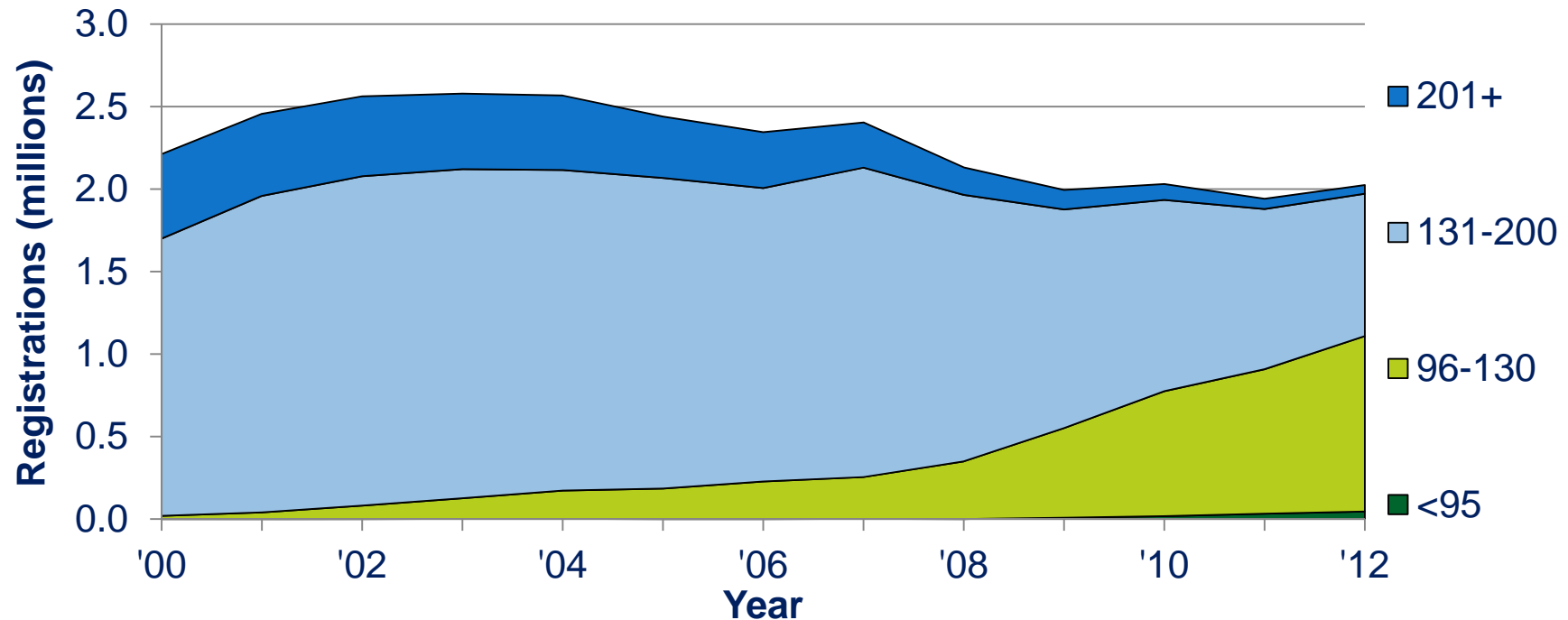
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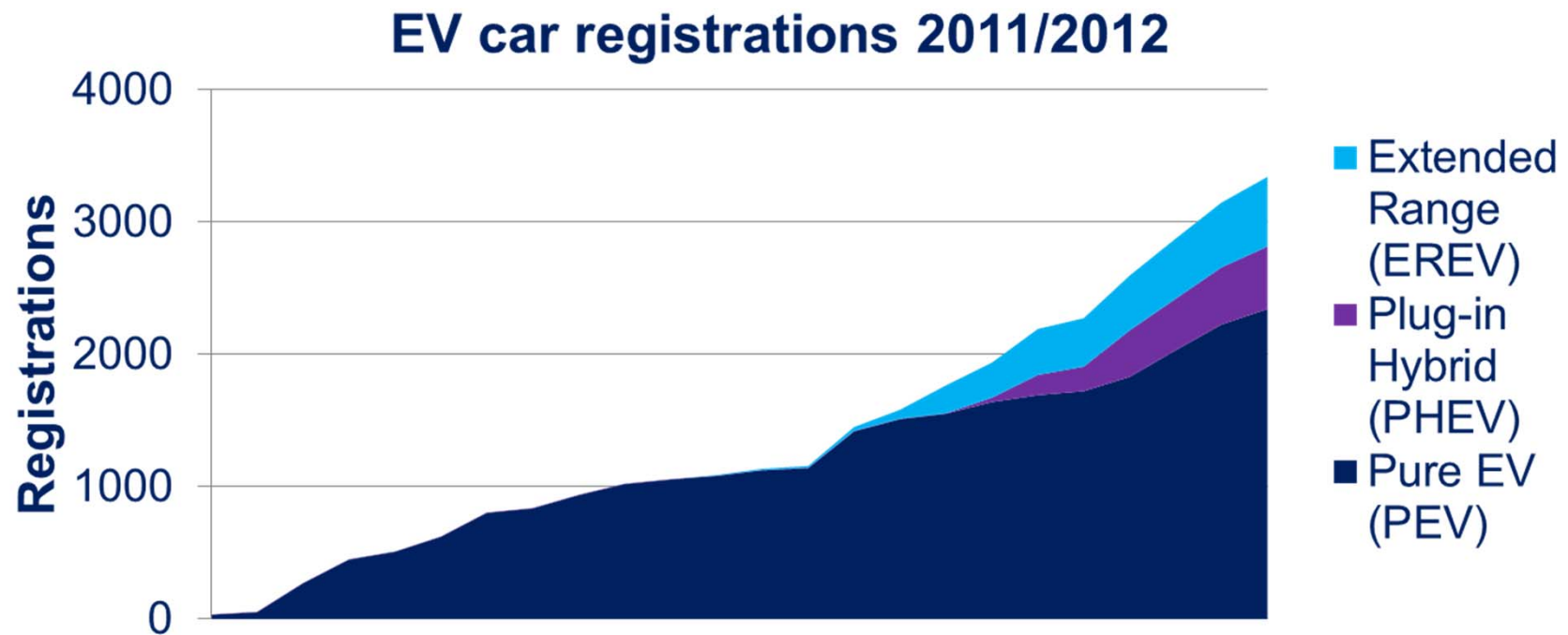
Car Purchase Trends

Market by CO₂ bands



55.0% of the market below 130g/km and 8.2% below 100g/km, compared with 0.9% and 0% in 2000

Growth in Purchase of Electric Vehicles



EV Purchases in 2012 were more than double the previous year

EV's represent 0.11% of all vehicles – so there is still a long way to go

Summary

- Extensive data set to understand real-world driving and re-charging behaviour
- Identified barriers to EV take up
- Working with government and stakeholders to overcome these
- Implications of charging on electricity grid
- Demonstration of how ITS can support EV's
- Business models and social acceptance

Contact / Further Information

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<http://www.ceg.ncl.ac.uk/transport/index.htm>

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