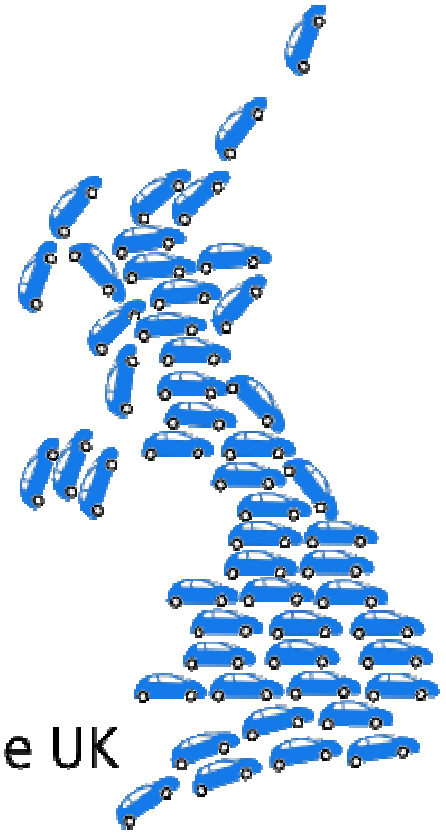
EPSRC
Engineering and Physical Sciences Research Council

RESEARCH COUNCILS' energy PROGRAMME

MOT



Motoring and Vehicle **O**wnership **T**rends in the UK

http://www.abdn.ac.uk/ctr/research/currentbr-research-projects/mot

1 4 9 5 UNIVERSITY OF ABERDEEN

TRL

UWE BRISTOL University of the West of England

University of BRISTOL

Project partners

- Dr Jillian Anable, Geography and Environment, University of Aberdeen (PI)
- Dr Sally Cairns, Transport Research Laboratory
- Professor Eddie Wilson, University of Bristol
- Dr Tim Chatterton, Geography and Environmental Management, University of the West of England

MOT: Motoring and vehicle **O**wnership **T**rends

- 3 year project (from 1/10/12) with:
  - 4 academic partners (Aberdeen Uni, Southampton Uni, TRL Ltd. and Uni West of England)
  - DfT + DECC are official project partners
- Follows a 3 month scoping study in 2011
- Radical new look at emissions and energy demand from private transport
- Uses new data sources to find new patterns in road transport emission sources

Core dataset

- In 2005 the UK Vehicle and Operator Services Agency (VOSA) introduced computerised system for recording annual ‘MOT’ roadworthiness tests
- 35 million vehicle tests each year
- Published by DfT in November 2010
- Contains:
  - the vehicle odometer (mileage) reading
  - the vehicle manufacturer, type and engine capacity
  - the vehicle's year of first use
  - the top-level postal area (letters only from the postcode) <u>of the Vehicle Testing Station</u>
  - We are applying to VOSA for data on the registered keeper


VT20 MOT Test Certificate

VOSA Vehicle & Operator Services Agency

Note: If you have doubts as to whether this certificate is valid, please use the service described in note 3 overleaf to check.

MOT test number: 211160699018 | Make: FIAT | Odometer reading: 71176 Miles

Registration mark: X774WAH | Model: SEICENTO SPORTING | Test class: 1V

Vehicle identification or chassis number: ZFA18700006110503 | Colour: YELLOW

Expiry date: APRIL 19th 2010 (TEN) | Issue date/time: MARCH 27th 2009 12:30 (ONE) 13:30

Additional information: N/A

To preserve the anniversary of the expiry date the earliest you can present your vehicle for test is 20/03/2010

Advisory Notice issued: Yes

Test station number: V101944

For all vehicles with more than 8 passenger seats

Seat belt installation checked this test: N/A | Number of seat belts fitted at time of installation check: N/A | Previous installation check date: N/A

Issuer's name in CAPITALS: D. A. LEE | Signature of issuer

Warning: A test certificate is not evidence that the vehicle is in a satisfactory condition.
Check carefully that the above details are correct.
Do not accept a certificate which has been altered.

Affix sticker to inside of windscreen as a reminder

Reg Mark: X774WAH
Make: FIAT
Test Station: V101944
MOT Expiry: APRIL 19th 2010 (TEN)

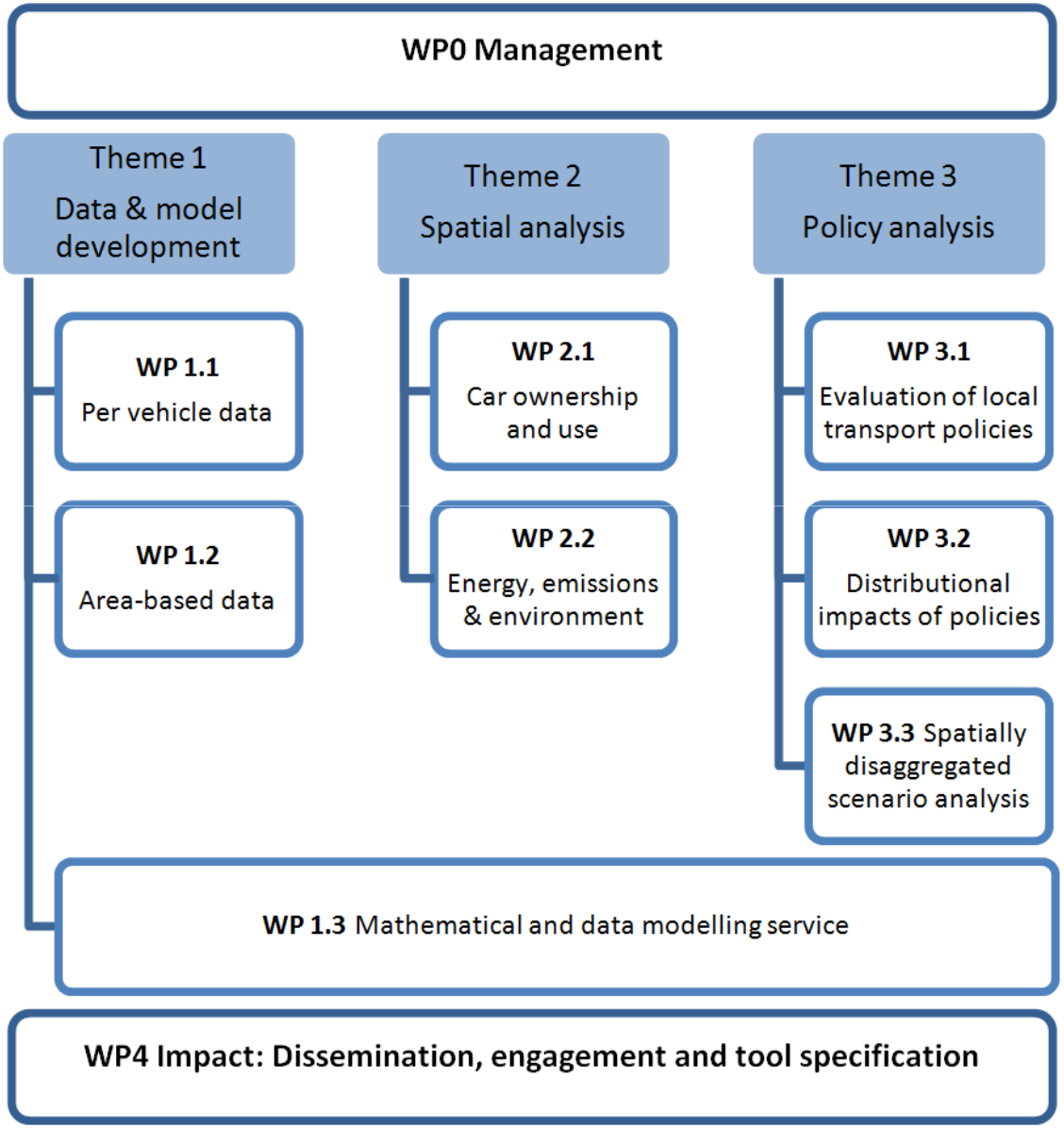
Fold here

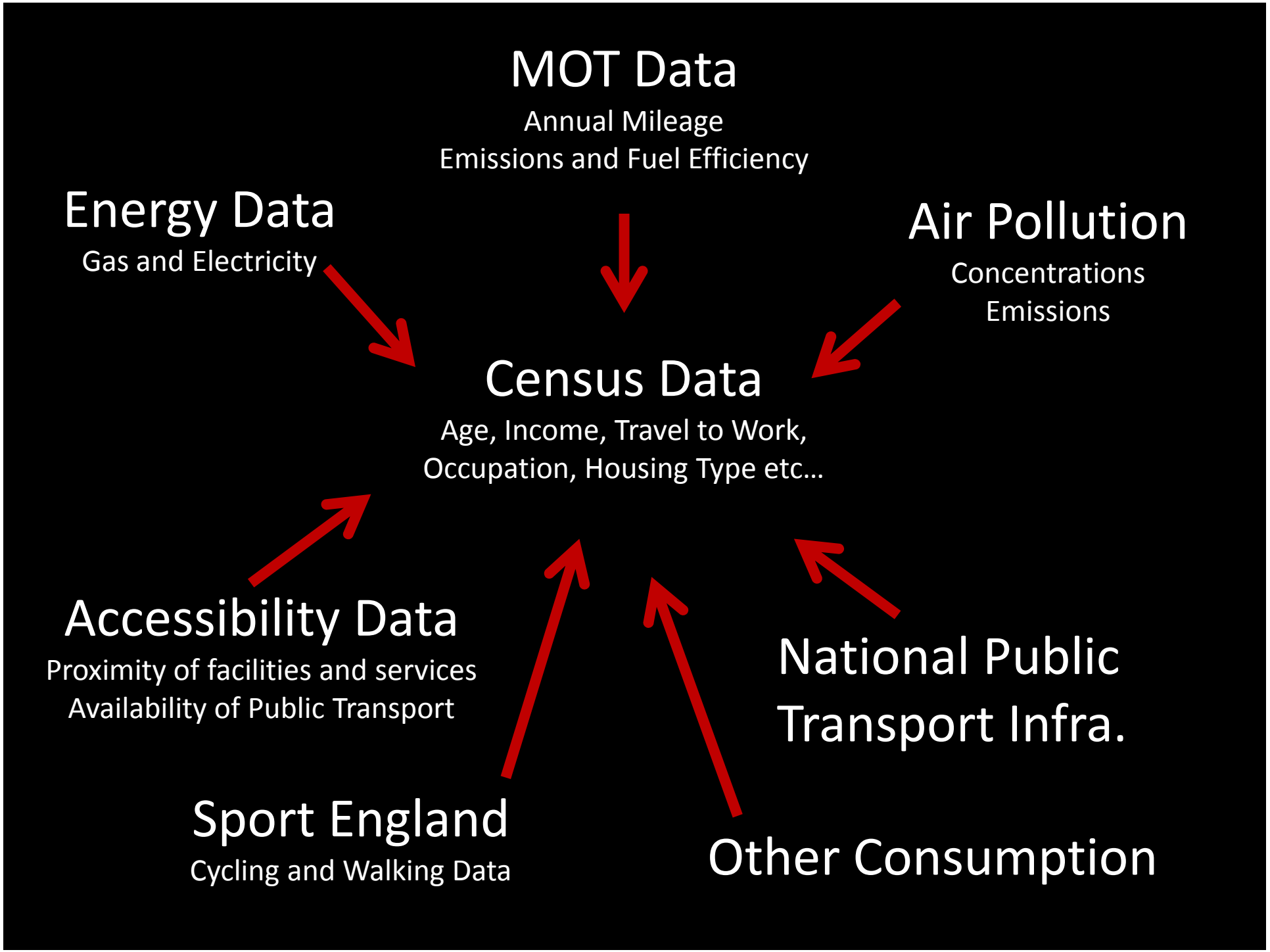
Inspection Authority
TEBAWOVA LIFTING LTD
HORNET ROAD
READING
RG2 0QX
01189 312343

MOT: Objectives

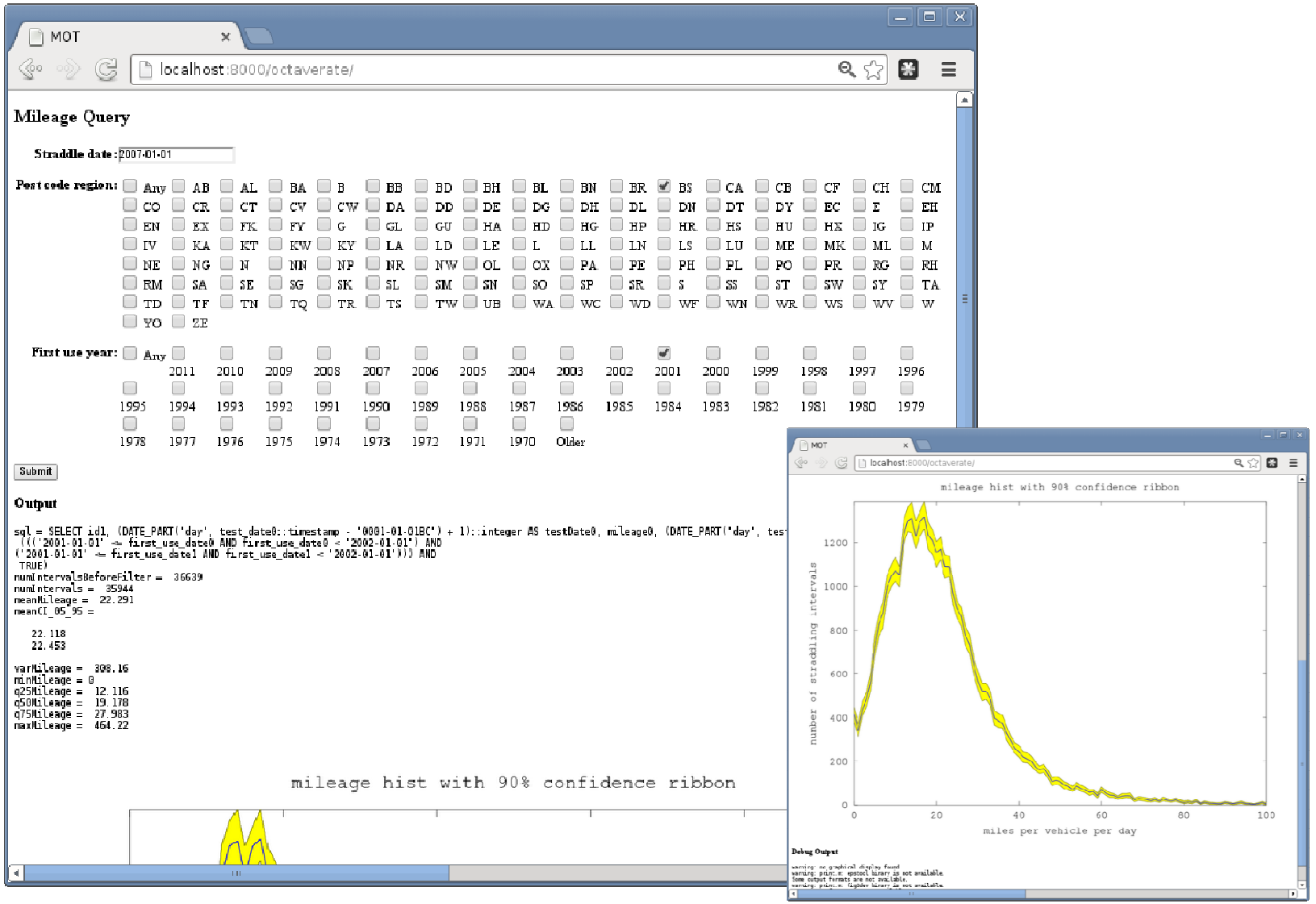
1. **Combine new sources of data** to give a spatially and temporally disaggregated understanding of car ownership and use, and associated energy demand and emissions
2. **Develop new methodologies**, datasets and research capability to understand the relationships between energy demand and emissions from car use, and a wide range of structural and social factors
3. **Describe and explain the linkages** between different fuel uses, energy end uses and energy service demands at the domestic level
4. **Develop a baseline** of spatially disaggregated energy demand from car use from which future **scenarios** can be developed and modelled
5. **Assessment of social and environmental justice issues** in relation to income, fuel use and price, emissions of pollutants and exposure to impacts.
6. **Track changes over time and space** in order to evaluate the scale and distribution of the impacts of local transport policy interventions

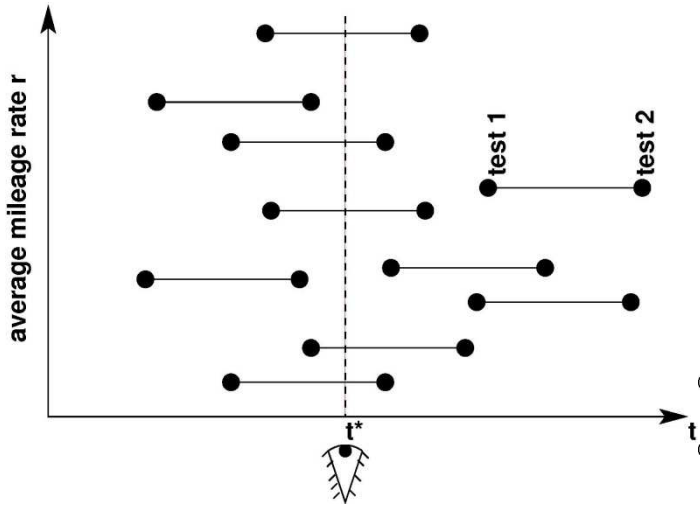
MOT: Project structure




MOT Data
Annual Mileage
Emissions and Fuel Efficiency
Energy Data
Gas and Electricity
Air Pollution
Concentrations
Emissions
Census Data
Age, Income, Travel to Work,
Occupation, Housing Type etc…
Accessibility Data
Proximity of facilities and services
Availability of Public Transport
National Public
Transport Infra.
Sport England
Cycling and Walking Data
Other Consumption

Data interface development





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On the Estimation of Temporal Mileage Rates

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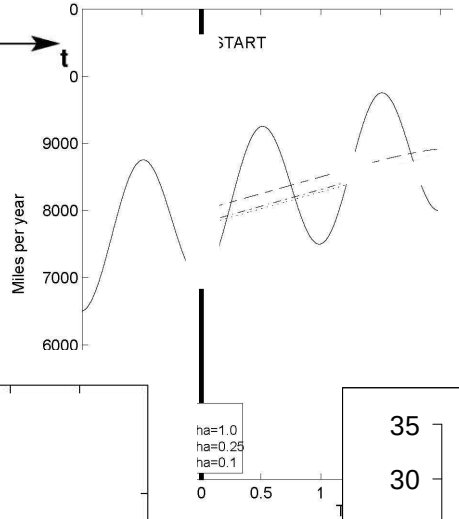
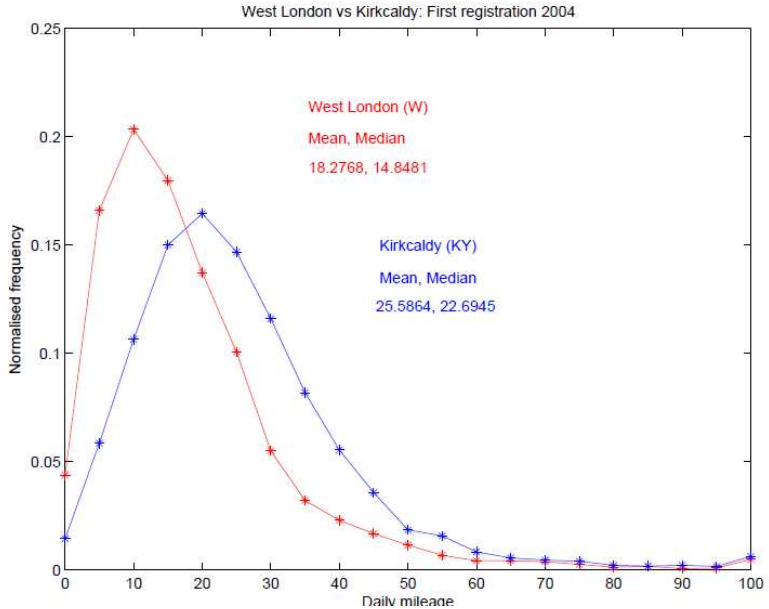
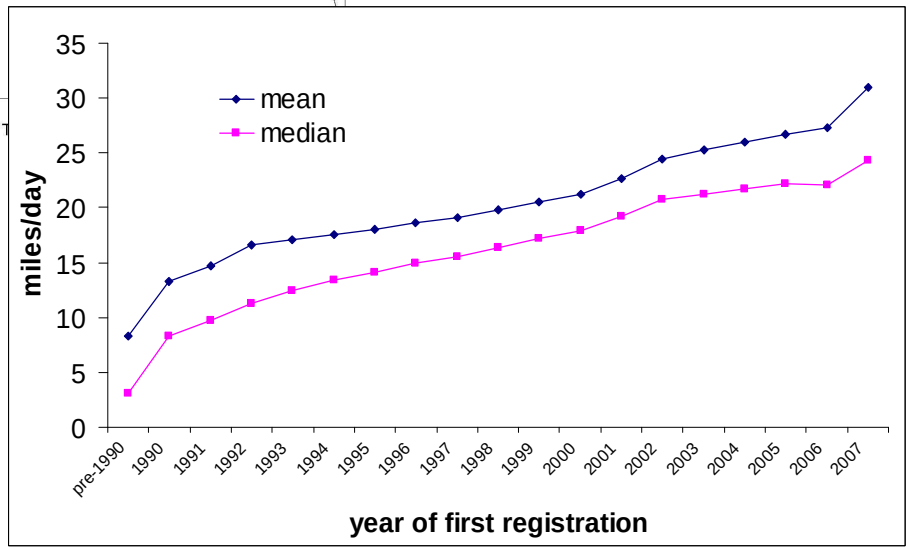
[b]*Centre for Transport Research, University of Aberdeen, UK*
[c]*TRL, UK*
[d]*Centre for Transport Studies, University College London, UK*
[e]*Air Quality Management Centre, University of the West of England, UK*

Abstract

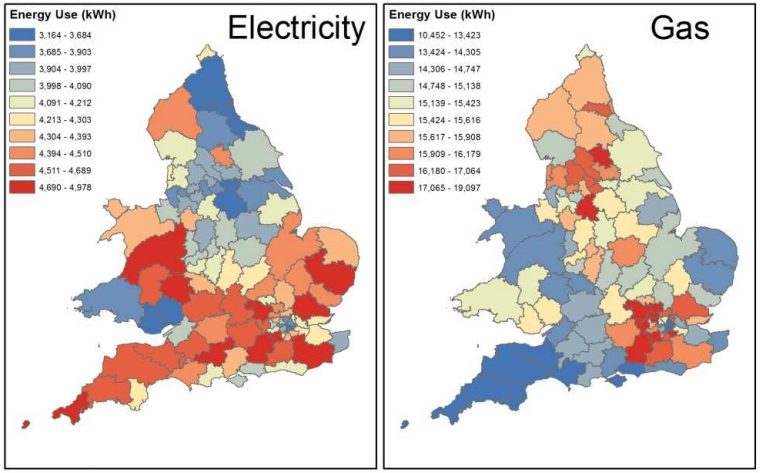
Mathematical and computational techniques are developed for the analysis of annual MOT (roadworthiness) test data that the UK Department for Transport has placed in the public domain. This paper focusses on the development of a new theory which has the potential to estimate fine-scale temporal variations (e.g., monthly) in vehicle mileage at a population level, that we call the *spot rate* — derived from coarse-scale (e.g., annual) mileage data at an individual vehicle level. Due to the availability of data, the focus is on the UK situation, but the theory has applications to any data set internationally, where odometer readings of individual vehicles are monitored on an occasional basis. Numerical time-stepping schemes are derived from the theory and are tested on synthetic data to permit comparison with a known ground-truth mileage rate. It is found that for practical applicability, the methods need to pre-process data

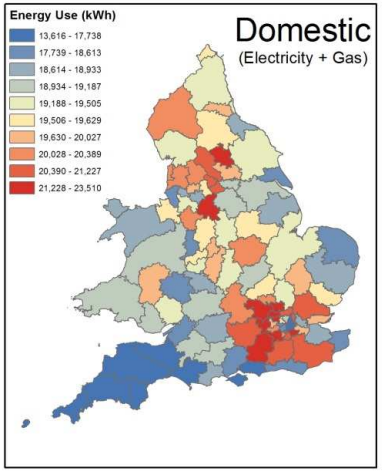


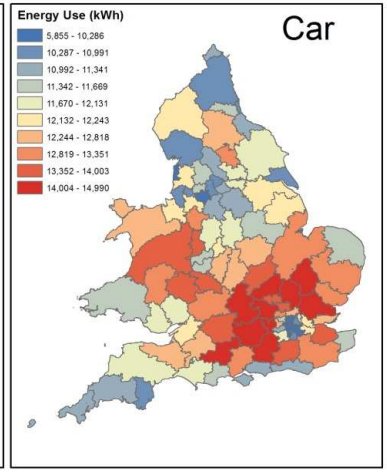


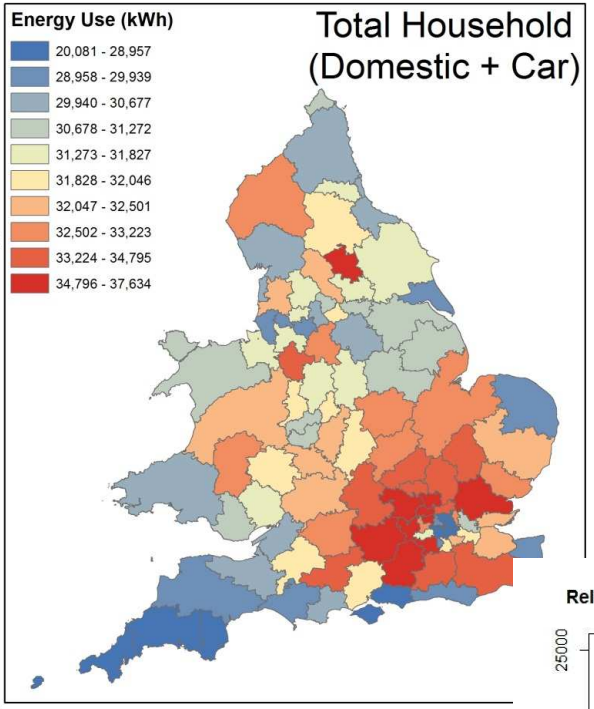


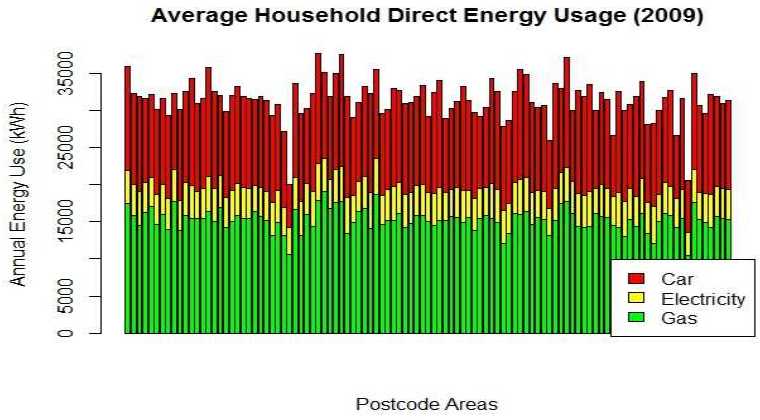
Average Household Direct Energy Usage 2009 by Postcode Area

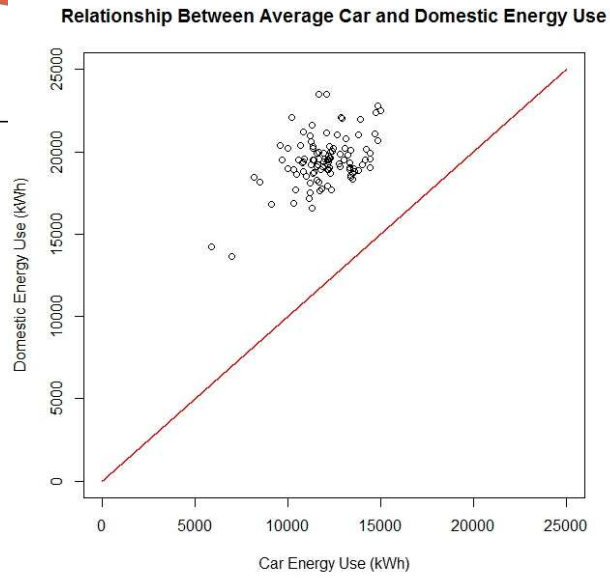






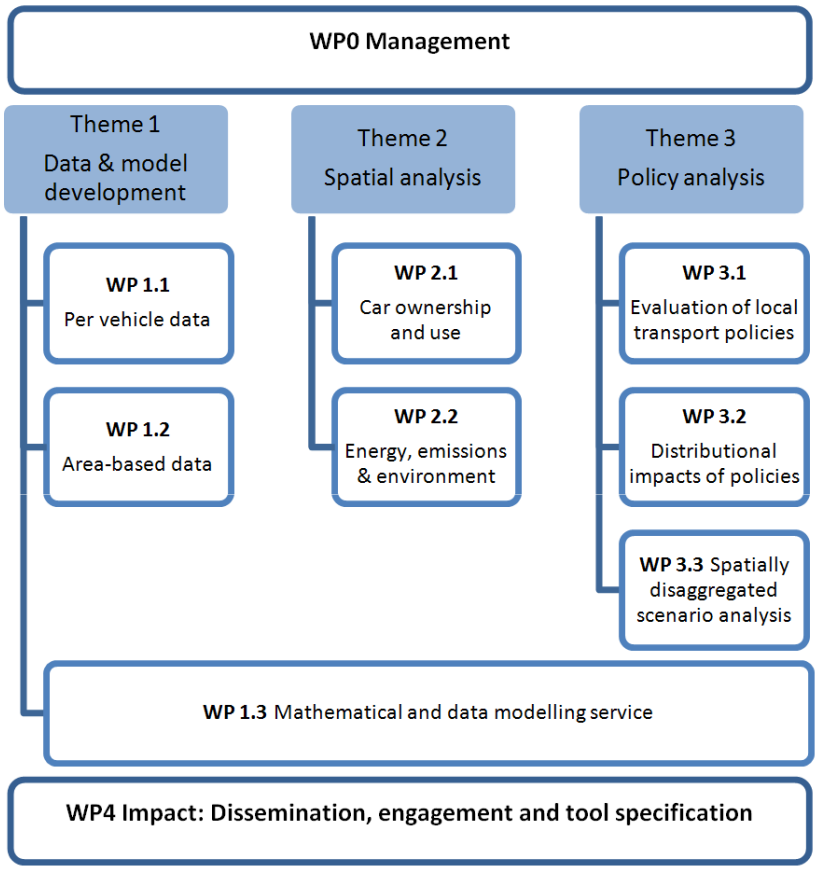






Intended Outcomes

- New, spatially, temporally and socially **disaggregated understanding of car ownership**, and associated emissions and energy demand.
- Links with other direct energy demand to develop more holistic **carbon and energy footprints**.
- Development of **future scenarios** for electricity demand from EVs.
- Assessment of **social and environmental justice issues** in relation to income, fuel use and price, emissions of pollutants and exposure to impacts.
- Ability to **track changes over time** and space in order to evaluate the scale and distribution of the impacts of local transport policy interventions.
- Design of a **tool to aid monitoring of local transport policies**.



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http://www.abdn.ac.uk/ctr/research/currentbr-research-projects/mot