Is there a transport equivalent of fuel poverty?

Transport-related economic stress and vulnerability to fuel price increases in the UK: intermediate findings from the (t)ERES project

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ITS Seminar Series
10 March 2016
Transport costs and affordability – Why it matters?

Transport costs

Residential location

Housing costs

Domestic energy costs

Geography, urban form, spatial development, etc.

Common energy nature

Global fossil fuel prices, energy mix, CO2 reduction policies, etc.
Official metrics / indicators

- Housing costs
  - Housing affordability
  - Housing overburden

- Domestic energy costs
  - Fuel poverty
  - Energy poverty

- Transport costs
- Geography, urban form, spatial development, etc.

- Residential location

- Common energy nature
  - Global fossil fuel prices, energy mix, CO2 reduction policies, etc.
Transport costs and affordability

• ‘forced car ownership’ (Jones, 1987; Banister, 1994; Currie & Senbergs, 2007; Currie & Delbosc, 2011; BMVBS, 2012)

• ‘transport poverty’ (Gleeson & Randolph, 2002; Stokes & Lucas, 2011; RAC, 2012; Sustrans, 2012)

• ‘commuter fuel poverty’ (Lovelace & Philips, 2014)

• ‘oil vulnerability’ (e.g. Dodson & Sipe, 2007; Rendall et al., 2014)

• ‘transportation affordability’ (Litman, 2015; Lucas et al., in press)

• ‘précarité énergétique des transports’ (Cochez et al., 2015; Jouffe & De Massot, 2013; ONPE, 2014)

• ‘car-related economic stress’ (CRES) (Mattioli, 2013; Mattioli & Colleoni, 2016)

➤ car-owning households who need to spend a disproportionately high share of their income to get where they need to go, with negative consequences in terms of restricted activity spaces and/or spending cuts in other essential areas
1. The links between transport, housing and domestic energy costs: (how) are they considered in UK, FR and DE?

2. Fuel poverty and ‘transport poverty’: from analogy to comparison

3. Two possible metrics of ‘car-related economic stress’

4. Policy implications: synergies and trade-offs with climate change policy
1. Transport, housing and domestic energy costs in UK, FR & DE

• Multilingual literature review

• Two-day international workshop

• Transport Policy special issue (2017)
Transport costs

Transport and social exclusion, carless households, etc.

Residential location

Housing costs

Common energy nature

Domestic energy costs

Transport poverty

Fuel poverty

ANALOGY
21 million households in transport poverty

An estimated four fifths of the UK’s 26 million households are in what could be described as ‘transport poverty’.

This means more than ten percent of their expenditure goes on transport (both personal and public) with the majority of it being used to buy and run a car. By way of comparison, the official definition of fuel poverty is where a household spends more than a tenth of its income on keeping warm.

Analysis by the RAC Foundation shows that when all households (with and without a car) are divided into five equal groups (quintiles) according to income, then in the:

- lowest earning quintile: 9% of expenditure goes on transport
- second quintile: 11.5%
- third quintile: 13%
- fourth quintile: 14.5%
- highest earning quintile: 15.5%
Millions face transport poverty

PRESSURE for cuts in fuel duty in next month’s Budget grew yesterday as experts claimed that 80 per cent of British households are now living in “transport poverty”.

Government postpones planned 3p fuel duty increase

26 June 2012 | UK Politics

The government has announced it will postpone its 3p-a-litre rise in fuel duty in August until January next year.

The move follows a campaign by some road users’ groups, who argued the increase would damage the economy.
• **Sustrans (2012):**
  ≈1.5 million people at risk of ‘transport poverty’ in England. Half of local authorities have at least one high risk area

• **Lovelace & Philips (2014):**
  2-6% of population in York is ‘commuter fuel poor’
Cout résidentiel

Residential location

Transport costs

Housing costs

Précarité énergétique

Domestic energy costs
• Two forms of ‘energy precarity’: domestic energy and transport

• (How) do they overlap?

• INSEE model based on census

• (How) do households trade-off between transport and housing costs?

• How to encourage sustainable residential location choices?

• Concern for peri-urban areas
- Transport costs
- Residential location
- Housing costs
- Domestic energy costs
- Energiearmut
• “Opportunities and risks of increasing transport costs for spatial development” (BBSR, 2009)

• Web tools to create awareness of implications of residential location choices

Gertz et al., 2015:
• Higher fuel prices…
  ➢ ‘return to the city’
  ➢ higher housing prices!
2. Is there a transport equivalent of fuel poverty?

**HoC Environmental Audit Committee** inquiry into “Transport and the accessibility of public services” (2013):

- **“Would a measure of the transport accessibility of key public services, in a similar manner as ‘fuel poverty’ be useful for policy-making (and if so how it should be defined)?”**

**Sustrans’** response:

- wish to "get transport poverty recognised alongside fuel poverty as a meaningful concept”
- "unlike fuel poverty, at the moment there is no officially accepted definition of transport poverty and no strategies in place to address the issue"
FUEL POVERTY

Lack of warmth results from:

1. (low) income
2. (high) energy prices
3. (poor) energy efficiency

‘TRANSPORT POVERTY’

Lack of access results from…

- many more drivers!
  (lack of access, disability, age, gender, cognitive factors, low travel horizons, generation, lack of driving licence, coordination within households, safety concerns)

- not all of them are economic factors
Drivers

(Lucas et al., 2016)
Consequences

Poverty → Cannot afford heating
Households are willing to **spend large amounts on commuting travel**, curtailing other expenses.
FUEL POVERTY

1. Temperature standards based on WHO guidance
2. Four heating regimes based on activity status of adults and under-occupancy
3. Required energy consumption estimated based on thermal efficiency
4. Required expenditure estimated based on prices

- It allows the inclusion of ‘underspending’ households.

TRANSPORT AFFORDABILITY

Problems:

- **Overwhelming complexity** of defining activity participation standards: highly individualised and context-specific
- Each required trip would need to be assigned destination, travel distance and mode

- Transport affordability metrics should be based on *actual* (not required) expenditure
FUEL POVERTY

TPR (2001-2012):
- 10% = twice the actual median cost burden of domestic energy in the UK in 1988(!)

LIHC (2013-):
- median required costs of domestic energy estimated for that year

TRANSPORT AFFORDABILITY

- 10% or other thresholds originally estimated based on domestic energy costs data are not suited for use in transport!

➤ Any threshold of transport affordability should be derived by data on transport spending
FUEL POVERTY

TPR (2001-2012):
• no threshold, but **regressive distribution of domestic energy costs** ensures that most non-poor households are excluded anyway.

LIHC (2013-):
• 60% of median residual income (after housing and required domestic energy costs)

TRANSPORT AFFORDABILITY

• Transport costs are **not necessarily regessively distributed**
  ➢ a simple cost burden threshold will not ensure that well-off households are excluded.

➢ **Income threshold is necessary**
➢ **LIHC approach should be preferred**
3. A LIHC metric of Car-Related Economic Stress (GB)

Data: Living Costs and Food Survey 2012
Households who cannot afford at least 3 of the following:

1. to face unexpected expenses;
2. one week annual holiday away from home;
3. to pay for arrears (mortgage or rent, utility bills or hire purchase instalments);
4. a meal with meat, chicken or fish every second day;
5. to keep home adequately warm
6. to have a washing machine
7. to have a colour TV
8. to have a telephone
9. to have a personal car
A material deprivation-based measure of CRES
Profile based on EU social indicators

UK 2012

- Fuel poverty
- At risk of poverty or social exclusion
- At risk of poverty
- Housing cost overburden
- Working poor
- Low work intensity
- Jobless household
- Severe material deprivation

Data: EU-SILC
Deprived of what exactly?

Data: EU-SILC
7-9% of the population (1.7-2.3 million)
not so different from the average of the population…but clearly distinct from LILC and households who cannot afford cars
spatial factors: low density areas, (semi)detached housing
socio-economic factors that may increase ratio between car travel needs and household income: household size, presence of children, underemployment, disability
overlap of different types of economic stress:
  high rates of fuel poverty
  housing cost overburden is positively associated with CRES
association with a certain stage of the family life-cycle (middle adulthood, children, access to home ownership…)?
## 4. Fuel poverty: synergies and trade-offs with climate change policy

<table>
<thead>
<tr>
<th>WIN (affordability) LOSE (climate)</th>
<th>WIN-WIN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Income and costs policies</strong> (e.g. Cold Weather Payments, Winter Fuel Payments, Warm Home Discount)</td>
<td><strong>Energy efficiency policies</strong> (e.g. Warm Front, Decent Homes Standard, Affordable Warmth Obligation)</td>
</tr>
<tr>
<td>✓ increase energy consumption</td>
<td>✓ reduce in principle both fuel poverty and emissions (if targeted to low-income groups)</td>
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<td>✓ reduce incentives to invest in energy efficiency</td>
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<td><strong>Pricing policies</strong> (e.g. carbon pricing, environmental obligations on energy suppliers that are recouped through higher prices)</td>
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<tr>
<td>✓ regressive impact</td>
<td>✓ increase hardship</td>
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(Ürge-Vorsatz & Tirado-Herrero, 2012)
What is energy efficiency?

**FUEL POVERTY**

1. Home insulation
2. Heating system
   - (Home size)

**TRANSPORT AFFORDABILITY**

1. Required travel distances
2. Viability of energy-efficient modes
3. Vehicle fuel efficiency

- No inevitable trend towards increasing energy efficiency
- Lock-in into residential location is stronger

Energy efficiency of housing stock increases almost by definition over time (demolitions, new buildings, retrofit)
Cost- and energy- efficiency vs. effectiveness

FUEL POVERTY

- Most energy-efficient housing / technologies
  = most cost-efficient to run
  = most effective in delivering warmth

TRANSPORT AFFORDABILITY

- Walking, cycling
  = most energy-efficient
  = most cost-efficient
  ≠ most effective in delivering access (private car)
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| Income policies and costs policies: (e.g. demand-side subsidies to car and public transport use, income-tax deductions for commuting, concessionary travel passes) | increase energy consumption  
|  | may increase car-dependence |

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| Energy efficiency:  
| - reduce need to travel (e.g. compact city policies)  
| - improve modal alternatives to the car  
| - ‘technological fix’ |

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<tr>
<td>Pricing policies: (e.g. fuel tax escalator, carbon pricing)</td>
<td>increase hardship among car-dependent, low income households</td>
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(Mattioli, 2013; SDC, 2011)
Mismatches in fuel poverty

1. Do low income households live in less energy efficient housing?

2. Low income households tend to pay higher tariffs

3. Higher income households are earlier adopters of low-carbon microgeneration technologies, benefit from Feed-in-Tariffs

Income

Energy Efficiency

Prices
Mismatches in transport affordability

1. Urban socio-spatial configurations where low-income groups are overrepresented in low-density, car-dependent areas

2. Socioeconomic lags and gradients in the diffusion of energy- and cost-efficient vehicle technology (including low-carbon vehicles)

3. One-off expenses on public transport season tickets unaffordable for low-income travellers who rely on more expensive single tickets

4. Higher road fuel prices in rural areas
Conclusions

• Transport poverty: more complex than fuel poverty → cannot rely on a single metric

• But: useful to develop sensible metrics of transport affordability

• Mismatches between income, prices and energy efficiency in transport deserve more attention

• Improving energy efficiency of transport systems: more long-term, resource intensive and politically controversial than in the housing sector → more trade-offs between social and environmental goals
Thank you for your attention!

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https://teresproject.wordpress.com/
@TranspPoverty

www.demand.ac.uk
@DEMAND_CENTRE
To know more about this work


• This work arises from the research project "Energy-related economic stress in the UK, at the interface between transport, housing and fuel poverty", funded by the Engineering and Physical Sciences Research Council (grant number EP/M008096/1) as part of the RCUK Energy Programme. The funders had no involvement in the analysis and interpretation of the data, nor in the preparation of the presentation.