Using NTS data to explore frequency and rhythms of food shopping

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“Gross polluters for food shopping travel - a practice-based typology”

Two **methodological challenges**:

1. How to **investigate the frequency** of activities

2. How to **highlight meaningful patterns of variation** in energy-demanding (mobility) practices

Why National Travel Survey data?

- Theme 1 ambition to investigate the timing and rhythm of energy-demanding practices (Walker, 2014).. But what about **activities with less than daily frequency?**

- 2 days in British 2000 TUS clearly inadequate
- 6 weeks ideally needed for travel behaviour (Schlich & Axhausen, 2003)

- **British NTS**
  - **advantages**: **7 consecutive days**, all household members, continuous survey, large sample, includes information (distance, vehicles) allowing to compute energy / emissions estimates
  - **limitations**: only trips reported, short walks (<1 mile) only on 7th day

Why food shopping?

- generally **less-than daily frequency but at least once a week** (Bhat et al., 2004): can assume that behaviour in travel diary is a **representative of a more general pattern**

- best analysed at the **household level**

- **substantive interest**:
  - substantial amount of travel
  - particularly and increasingly car dependent (until recently)
  - mostly studied from a built environment perspective – what about frequency?

Beyond aggregate averages – looking for variation

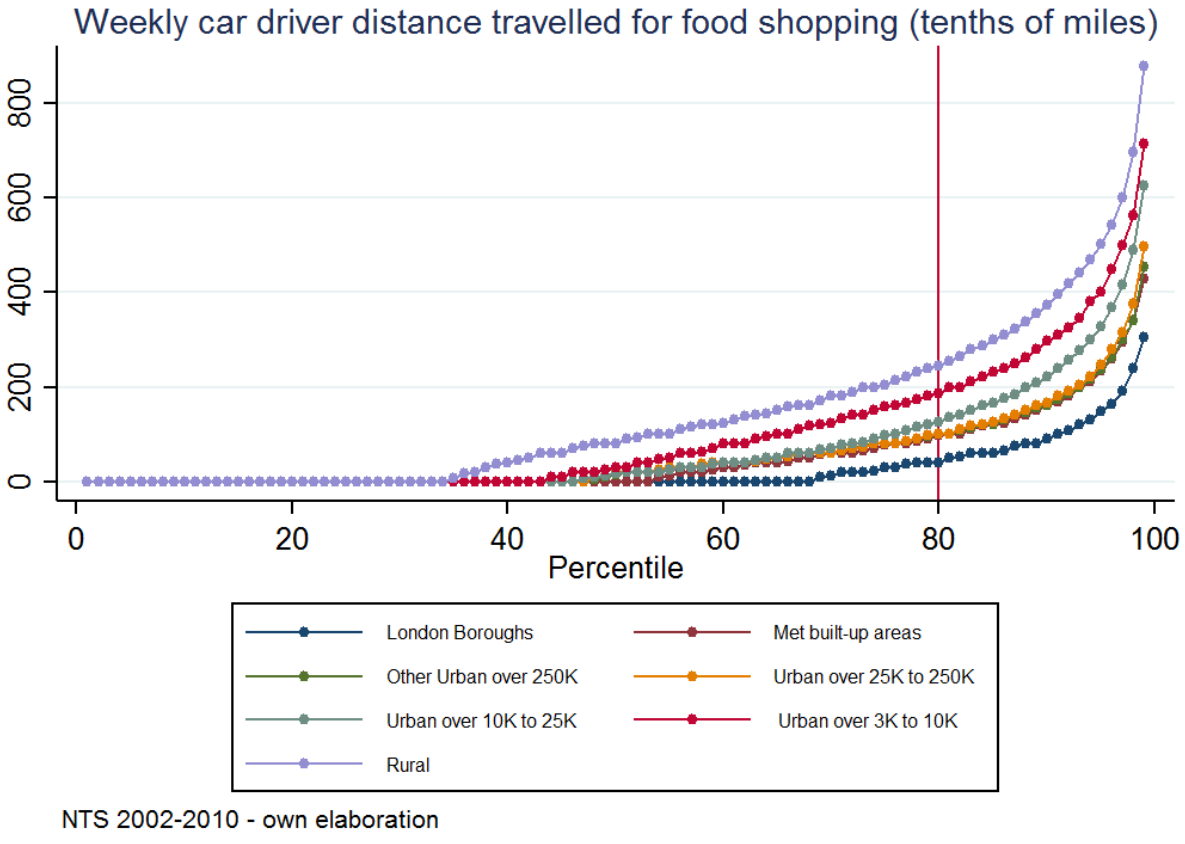
Three sequential steps:

1. Focus on a **single practice**: food shopping (travel)

2. Focus on '**gross polluters**' = households in the top 20% of weekly car driver distance for food shopping (proxy for CO_2 emissions) (cfr. Brand & Boardman, 2008)

3. **Cluster analysis** to highlight variation within the top 20%

‘Gross polluters’ for food shopping travel



NTS 2002-2010 - own elaboration

Cluster analysis

- Classification and segmentation techniques **common in 'ABC' research**
- CA has been **used to investigate 'clusters of practice'** based on own-survey data (Browne et al., 2014)…
- …**but conceptually tricky** to cluster practices based on information at the individual / household level
- notably when using existing datasets
- degree of arbitrariness in **choice of input variables**
- NTS **travel diary week data rarely used for clustering** (Mattioli, 2014)

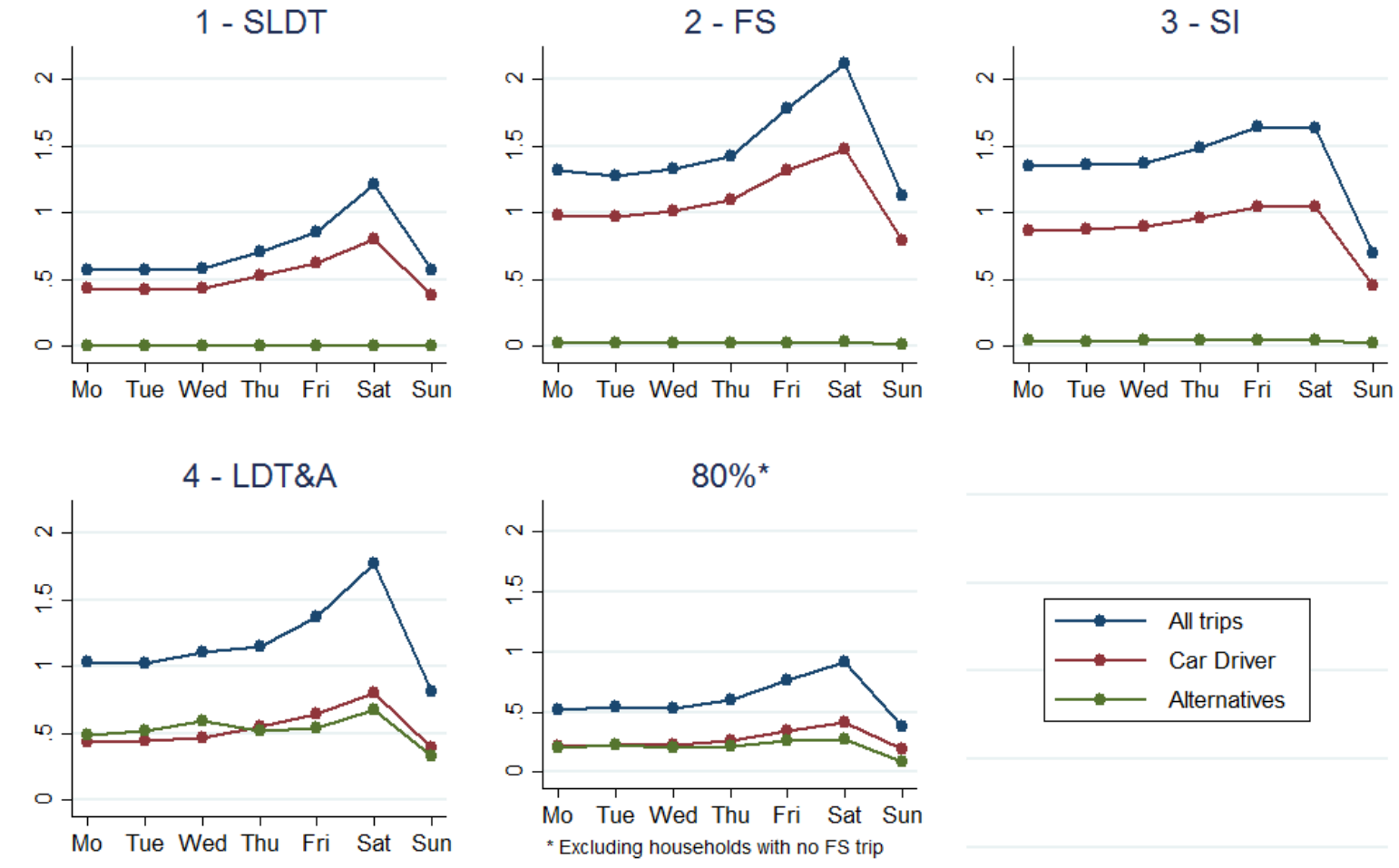
Input variables

1	**Distance**	Percentile of car driver distance travelled (within type of area)
2	**Concentration**	% of distance accounted for by longest trip
3	**Frequency**	Total number of car driver trips in travel week diary
4	**Alternative modes**	% of trips by modes other than car driver / passenger
5	**Shopping intensity (distance)**	% of total household car driver distance accounted for by food shopping
6	**Shopping intensity (time)**	% of total household travel time accounted for by food shopping

4 cluster solution

	Single long distance trip	Frequent shopping	Shopping intensive	Long distance trip & alternatives
	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Size (%)	44.9%	37.1%	11.7%	7.3%
Distance (percentile)	36	**64**	**64**	43
Concentration	**50%**	28%	34%	**49%**
Frequency	3.3	**6.8**	**5.5**	3.3
Alternatives	0.4%	1.3%	2.3%	**40.3%**
Shopping intensity – distance	12%	16%	**57%**	17%
Shopping intensity – travel time	9%	13%	**43%**	16%

Trip rates by day of the week



NTS 2002-2010 - own elaboration

Socio-demographic profile

	1 - Single Long Distance Trip	2 - Frequent Shopping	3 - Shopping Intensive	4 - Long Distance Trip & Alternatives	MEAN
DEMOGRAPHICS					
Household size	2.6	2.8	2.0	2.7	**2.6**
HRP over 60 years old	26%	28%	68%	31%	**31%**
HRP non-employed	19%	20%	67%	26%	**25%**
Pensioner household	17%	17%	57%	19%	**21%**
INCOME					
Lowest or second quintile	26%	26%	54%	31%	**29%**
Mobility difficulties					
Mobility difficulties (foor or bus)	16%	20%	43%	17%	**20%**

Conclusions

- Frequency (not just distance) as a problem. No strong impact of accessibility: built environment matters, but it is only part of the story

- Focusing on **top 20% for a specific practice brings to light partly different social groups** than Top 20% in terms of overall transport emissions (high income, rush hour of life, etc., cfr. Brand & Boardman, 2008)
- **Who should be the target for policy?**

- Clustering based on patterns of activity over a week, then description based on characteristics of individuals / households. Is this an **useful approach?**

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Thank you for your attention!

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