Clicks vs Bricks on Campus: Assessing the environmental impact of online food shopping.

Sharon Cullinane, Julia Edwards and Alan McKinnon
Heriot-Watt University
UK E-retail spend (£bn)
Travel for shopping

• In GB, on average, each person makes 219 shopping trips per year (vs 160 for commuting)
• This accounts for 21% of total trips made
• Each person travels 926 miles per year to shop.
• 82% of this distance is done in a car
• Contributes approx 264kg CO$_2$ per person per year
Impacts of online shopping on travel (passenger)

- **First order effects:**
  - Reduced car use (but trip chaining) – substitute

- **Second order effects:**
  - Releases car for other trips (by shopper or other member of household)
  - Make longer shopping trips
  - Still visit shops for social reasons

*Substitute or complement*
Views of large supermarkets

**Ocado** (responsible for deliveries for Waitrose supermarket):
“each Ocado delivery van replaces 40 car journeys every day”

**Tesco**: “each delivery van replaces 6000 car journeys per year”
Impacts of online shopping on travel (freight)

More deliveries to home. Effects depend on:

- Vehicle type
- Drop density
- Geographical coverage
- Returns
- “not at homes”
- Load consolidation

Plus

- Sourcing from further afield
- Greater use of air transport
- Construction of new e-fulfilment centres
Research Question

- Does online grocery shopping reduce total vehicles miles travelled?
- Do the shopping habits of students give us any insights?
- Pilot study for large-scale survey of population
Methodology

- Self-completion questionnaire survey of Heriot-Watt University students in April 2008.
- Heriot-Watt University located on outskirts of Edinburgh, approx 3 miles from nearest supermarket
- 358 questionnaires completed
Table 1. Reasons why respondents food-shop online

<table>
<thead>
<tr>
<th>Reason</th>
<th>Average score (max=4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>It saves me having to carry things</td>
<td>3.38</td>
</tr>
<tr>
<td>It gives me more time to do other things</td>
<td>3.31</td>
</tr>
<tr>
<td>I only buy what I need rather than buying luxuries</td>
<td>2.72</td>
</tr>
<tr>
<td>I can choose the shop I want to buy from</td>
<td>2.65</td>
</tr>
<tr>
<td>There is a better choice of goods online</td>
<td>2.45</td>
</tr>
<tr>
<td>Products are cheaper online</td>
<td>2.36</td>
</tr>
<tr>
<td>I don’t like shopping</td>
<td>2.15</td>
</tr>
<tr>
<td>It is better for the environment</td>
<td>2.13</td>
</tr>
<tr>
<td>I have a physical difficulty getting to the shops</td>
<td>1.82</td>
</tr>
<tr>
<td>It saves me having to park</td>
<td>1.67</td>
</tr>
</tbody>
</table>

N.B Average scores are calculated from a Likert type question.
Determinants of online shopping

Whether respondents shop online is significantly related to:

- Residential location (respondents living on campus are significantly more likely to shop online)
- Access to a car (those without access to a car are significantly more likely to shop online)
- Age (those age 26+ more likely)
- Nationality (Asians more likely)
Table 2. Attitudes to online food-shopping issues by online shoppers

<table>
<thead>
<tr>
<th>Statement</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>I think it is better for the environment than going to the shops</td>
<td>18 (32)</td>
<td>24 (43)</td>
<td>9 (16)</td>
<td>5 (9)</td>
</tr>
<tr>
<td>It has encouraged me to buy other things online</td>
<td>28 (49)</td>
<td>14 (25)</td>
<td>14 (24)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>It has reduced the need for me to have a car</td>
<td>17 (30)</td>
<td>10 (18)</td>
<td>14 (25)</td>
<td>16 (28)</td>
</tr>
</tbody>
</table>

N.B Figures in brackets are row percents.
Travel change as a result of online shopping:

- 67% of online shoppers previously walked or cycled to shop
- 37% said they still visit the shops as much or more frequently than before they shopped online
- Students group together to shop online (good for the environment)
Conclusions

- Overall reduction in mileage is small
- Obviously sample not representative of population. Results suggest some ideas to follow up in wider survey of population.
The MacGregors were desperate fur Broadband...

so they could hae hame delivery!