The impact of online shopping on the UK high street

The webinar will begin at 2pm

- You now have a menu in the top right corner of your screen.
- The red button with a white arrow allows you to expand and contract the webinar menu, in which you can write questions/comments.
- We won’t have time to answer questions while we are presenting, but will answer them at the end
- You will be on mute throughout – we can’t hear you.
The impact of online shopping on the UK high street

Webinar
3 March 2016

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Overview

- Introduction to the Big Data Network Phase 2
- Introduction to the CDRC
- Overview of the study
- Data used and methodology
- Summary
- Questions
Big Data Network – Phase 2

The ESRC has invested in three Business and Local Government Data Research Centres

- [blgdataresearch.org](http://blgdataresearch.org)
- [cdrc.ac.uk](http://cdrc.ac.uk)
- [ubdc.ac.uk](http://ubdc.ac.uk)

The three Research Centres:

- make data, routinely collected by business and local government organisations, accessible for research
- benefit to data owners and society
- ensure that individuals’ identities are safeguarded
Big Data Network Support

The UK Data Service was funded by the ESRC to support and coordinate activities between three Centres

• unify data discovery across the BDN2 data collections
• encourage the sharing of information and expertise across the Data Research Centres
• coordinate user training and capacity building in big data analytics for researchers using the data
Consumer Data Research Centre (CDRC)

Data Research Centre established by the ESRC
• University of Leeds
• University College London
• University of Liverpool
• University of Oxford

Data
• covers a range of topics concerning the characteristics, constraints and outcomes of consumption
• a searchable data catalogue
• Open, safeguarded and secure data

Training
• Data analytics (R, GIS)

www.cdrc.ac.uk
e-Resilience of UK retail centres
Content

- Background
- The concept of e-resilience
- Empirical analysis
- Research outputs
- Value added
Retail sector in UK

- Successful sector employing 2.9 million people
- Retail sales (£7.1 billion per week in 2015) – equivalent of 21% GDP
- We make 200 shopping trips (on average) per year
- Shopping destinations:
  - Free-standing store
  - Town centre
  - Shopping centre
  - Retail park
Evolution of town centres

- Competition from out-of-centre large retail developments
- Shock of the economic crisis
- Changing demographics and consumer culture
- Rapid growth of online sales
Online sales reached 15% of total sales in the UK

Rise of e-commerce, m-commerce and omni-commerce

Transformation of major retailers into ‘bricks & clicks’

Variable online penetration levels
Research question(s)

- Impact of online sales on UK retail centres
  - Geography of online sales little understood?
  - Structure of traditional high streets impacted by consumers' propensity for online shopping?
  - How can we measure ‘e-resilience’ of retail centres?
Concept of e-resilience

- E-resilience measures the vulnerability of British retail centres to the impacts of growing online sales

- Theoretical framework
- Measure of e-resilience
  - Estimation of retail catchments
  - Internet User Classification
  - Exposure to online shopping
  - Retail supply vulnerability
Theoretical framework

- **Connectivity** - available infrastructure to get online
- **Behaviour** - propensity to use internet for shopping
- **Demographics** (ethnicity, age, gender, disability)
- **Retail supply** - attractiveness, accessibility & convenience
Supply data

- 1300 town centres in Great Britain
- 2600 shopping centres & retail parks
- Retail centre occupancy data - Goad Experian, LDC
- Road network
- Internet speed data compiled at LSOA level
Demand data

- Census 2011 data at LSOA level
  - Demographic
  - Education
  - Employment
  - Engagement
- The Oxford Internet Surveys (OXIS)
Estimating retail catchments

- Catchment model for a national scale

- Catchment area estimation techniques
  - Simple methods – buffers, drive distance/time
  - Spatial Interaction Models (SIM) – gravity and probabilistic models

- Components of the SIM model
  - Competition
  - Attractiveness/hierarchy
  - Distance/decay parameter
The Huff probability model

\[ P_{ij} = \frac{A_j^\alpha D_{ij}^{-\beta s_j}}{\sum_{j=1}^{n} A_j^\alpha D_{ij}^{-\beta s_j}} \]

- **A** - attractiveness
- **Retail Centre (j)**
  - Large, Medium, Small (s)
- **D** - distance
- **LSOA (i)**
Outputs & model calibration

Internet User Classification (IUC)

- **IUC** – purpose specific geodemographic classification

**Data**
- Oxford Internet Survey (OXIS)
- Internet enabling infrastructures
- Socio-demographic indicators from the 2011 Census
Propensity for online shopping

- Online shopping rates differ between IUC groups
- Retail catchment profiles based on IUC

Index of high exposure
Vulnerability to online shopping

- **Retail supply factors**
  - Positive - anchor stores & leisure units
  - Negative - ‘digitalisation’ retail

- **Highest vulnerability** – secondary and tertiary retail centres in rural & suburban locations
- **Lowest vulnerability** – inner city locations, regional shopping centres
e-Resilience scores

- Index of high exposure
- Index of retail supply vulnerability
- **E-resilience score** - intersection of the above indices

**Table 1: 10 most e-resilient retail centres**

<table>
<thead>
<tr>
<th>Town Centre</th>
<th>Region</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ravenside Retail Park</td>
<td>South East</td>
<td>100.0</td>
</tr>
<tr>
<td>Boughton</td>
<td>East Midlands</td>
<td>95.0</td>
</tr>
<tr>
<td>Hersham</td>
<td>South East</td>
<td>89.6</td>
</tr>
<tr>
<td>Corbridge</td>
<td>North East</td>
<td>86.4</td>
</tr>
<tr>
<td>Halton, Leeds</td>
<td>Yorkshire and the Humber</td>
<td>86.0</td>
</tr>
<tr>
<td>Torport</td>
<td>South West</td>
<td>76.1</td>
</tr>
<tr>
<td>Marsh Road, Luton</td>
<td>East Of England</td>
<td>73.4</td>
</tr>
<tr>
<td>Kingston Park</td>
<td>North East</td>
<td>71.8</td>
</tr>
<tr>
<td>Knaphill</td>
<td>South East</td>
<td>71.5</td>
</tr>
<tr>
<td>Sky Blue Way, Coventry</td>
<td>West Midlands</td>
<td>70.7</td>
</tr>
</tbody>
</table>

**Table 2: 10 least e-resilient retail centres**

<table>
<thead>
<tr>
<th>Town Centre</th>
<th>Region</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woburn Sands</td>
<td>South East</td>
<td>1.0</td>
</tr>
<tr>
<td>Rochford</td>
<td>East Of England</td>
<td>6.8</td>
</tr>
<tr>
<td>Lydney</td>
<td>South West</td>
<td>22.5</td>
</tr>
<tr>
<td>Fordingbridge</td>
<td>South East</td>
<td>22.9</td>
</tr>
<tr>
<td>Rainham</td>
<td>South East</td>
<td>25.4</td>
</tr>
<tr>
<td>Uppingham</td>
<td>East Midlands</td>
<td>26.5</td>
</tr>
<tr>
<td>Salford</td>
<td>North West</td>
<td>27.3</td>
</tr>
<tr>
<td>Kew</td>
<td>Greater London</td>
<td>28.3</td>
</tr>
<tr>
<td>Romford Road</td>
<td>Greater London</td>
<td>28.5</td>
</tr>
<tr>
<td>Emsworth</td>
<td>South East</td>
<td>29.0</td>
</tr>
</tbody>
</table>
Calculation of e-resilience scores

Value added

- New insights into the debate on impacts of online retailing on the traditional ‘brick and mortar’ retailers
- Investigation of how the impact of online sales can be measured, and what role local demographics may have in that context
- Tools for various stakeholders useful to re-evaluation of retail capacity models & improvement of town centres performance
Next steps

- Updating retail centres boundaries
- Re-evaluation of retail catchments based on variable propensity for online shopping
- Evaluation of models using customers’ insight data (e.g. click and collect)
Any questions?