Mapping Travel-To-Work Flows

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RSAI-BIS Annual Conference (UKDS-CS Sessions), Harrogate, 23 August 2017
1. The DataShine Project & Websites
2. O/D Flow Maps: Design Choices
3. DataShine Commute: Cartography, Data, Tech
4. Example Insights and Case Studies
1. The DataShine Project

- B.O.D.M.A.S.
- Main period of work and releases: 2014-15
- 15 websites
  - 12 of these show aggregated Census 2011 statistics from ONS (via NOMIS), NRS and NISRA
DataShine Geodemographics Websites

Urban Elites
Educational advantage
Hammersmith and Fulham

Area Code: E00009533  City: London  Classification Code: D1

Top jobs
Global business

Area Code: E07000103  Classification Code: 2a
DataShine Follow-on Websites
• DataShine Election (GE 2010 and GE 2015)
  – L: Showing political colour (Enhanced R-G-B)
  – R: Showing swing party and winning party
Core DataShine Flow Websites
DataShine Flow Follow-On Websites

• Commuter Flow Map for USP.scot (Understanding Scotland’s Places)
Additional Cycle Flow Websites
2. O/D Flow Maps: Design Choices

- To avoid overloading the visual impact (or the web browser)
  - Restrict origin or destination
  - Only show flows above threshold
  - Minimise number of possible origins/destinations
  - Restrict the geography
  - Bend the lines
  - Route the flow
  - Don’t use a geographical map
  - Don’t use lines
Origin Destination Flow Maps: Choices

- Restrict to selected origin or destination
  - Removes “at a glance” visualisation
Origin Destination Flow Maps: Choices

• Only show flows above minimum
  – Simple threshold, set number of lines or dynamic value-based limit (e.g. >1% of origin population)
• Minimise number of possible origins/destinations
• Restrict the geography
  – PCT.bike, Lovelace et al., 2017
Origin Destination Flow Maps: Choices

- Bend the lines
  - L: Alastair Rae, 2001 Census, travel into London only
  - R: Ed Manley, top destination from origin, Oyster cards
• Route the flow
  – L: PCT.bike, 2011 Census, York: Lovelace et al., 2017
  – R: OSM-routed flows for bikeshare in central London
• Don’t use a geographical map
  – Robert Radburn / City: Car commute, London boroughs
Origin Destination Flow Maps: Choices

• Don’t use lines
3. DataShine Commute: Carto, Data

- Blue = commute to here
- Red = commute from here
Carto: Line Translucency
Cartographic Techniques

• We constrain the data to weighted centroids or lines, rather than areas
• We can then use a “regular” background map, e.g. from OpenStreetMap.org, Microsoft, HERE Maps, ArcGIS REST API
The Data Tells a Story…
Data Issues

• Some anomalous data (e.g. “walking” 200 miles)
  – People reporting their head office address as their workplace address, but actually work at a branch office

• Filtering out journeys with <6 people to minimise this problem, reduce “noise” and mitigate any low-level statistical record swapping
Technical Summary

• MSOA population weighted centroids (ONS)
• Origin-Destination aggregate table for the 2011 census, split by mode of travel and by MSOA.
  – LSOA now available
• OpenStreetMap (just as background map)
• OpenLayers 3+
• PostgreSQL/PostGIS querying
  – area squared cells for O/D datasets, so a database is certainly necessary
4. Insights and Case Studies

• Big City Commute – Variations in Mode
• Real-World Vehicle Emissions Testing
  – Where in London do a lot of people drive to work?
• Journeys by Bicycle
  – Varying topology of the cycle commute by city
  – Identification of routes for infrastructure improvement (pct.bike)
Mode of Travel to Work: City of London

METHOD OF TRAVEL TO WORK to the CITY OF LONDON

An interactive version of this map can be found at http://commute.datashine.org.uk/
Mode of Travel to Work: City of London
Mode of Travel to Work: Manchester Pic.
Finding Major Intralondon TTW by Car
DataShine: Great British Bike To Work

http://commute.datashine.org.uk/cycle.php
DataShine: Great British Bike To Work

http://commute.datashine.org.uk/cycle.php
• Websites featured:
  – http://commute.datashine.org.uk
  – http://regioncommute.datashine.org.uk
  – http://blog.datashine.org.uk/

• Research Blogs and Twitter
  – Oliver: @oobr / http://oobrien.com/
  – James: @spatialanalysis / http://spatial.ly/