Strive City

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Strive City

• The Strava Metro data gives us an unparalleled insight into cycling-based commuting
  • Real-time
  • Actual, measured behavior

• When aggregated to an area basis, provides an additional measure of the cycling character of that area:
Strive Index Uses

• Personal behavior nudges
  • What contribution can I make?
  • Where might I want to chose to live?

• Community Behavioral nudges
  • Competitions between schools, communities, workplace areas, companies in real-time (weekly / monthly)

• Strategic planning and evaluation of new infrastructure and policy interventions
Index Development

Data

<table>
<thead>
<tr>
<th>Strava Metro</th>
<th>National Records of Scotland</th>
<th>Consumer Data Research Centre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Origin-Destination Data</td>
<td>2011 Census Output Areas</td>
<td>2011 Area Classification for Output Areas</td>
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</tbody>
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Initial Analysis

• Summarise Strava Metro data by commute counts at the origin points for the entire year

• Assign counts to Output Areas and to the Area Classifications

• Summary statistics at three levels:
  • National
  • Local Authority
  • Area Classification Supergroup, Group and Subgroup
Technical Approach

• Strava Metro summaries at Output Area using SQL in Postgres
• Spatial and attribute joins in QGIS
• Python scripts (Zeppelin workbook) for deciles
• Tabular preparation in Excel
Outputs
2016 Commuting Cycling Trips per Output Area in Scottish LAs

Annual Cycling Trips per Area
2016 Commuting Cycling Trips per Output Area in Group Classes

- Inner-City Students
- Students Around Campus
- Ageing Rural Dwellers
- Aspiring and Affluent
- Challenged Diversity
- Rural Tenants
- Comfortable Cosmopolitans
- Ageing Urban Living
- Farming Communities
- Urban Professionals and Families
- Rented Family Living
- Constrained Flat Dwellers
- Suburban Achievers
- Ethnic Dynamics
- Ageing City Dwellers
- Asian Traits
- White Communities
- Semi-Detached Suburbia
- Aspirational Techies
- Hard-Pressed Ageing Workers
- Challenged Terraced Workers
- Migration and Churn
- Challenged Asian Terraces
- Industrious Communities
- Ethnic Family Life
- Endeavouring Ethnic Mix
Data Presentation Ideas
User Journey....

• Enter postcode or address to find a location
• Results screen
  • Map: selected area highlighted, with chloropeth colour-coding
  • Results panel: summary of how striving the area is:
    • National comparison
    • Local comparison (Local Authority)
    • Area Type comparison (based on Group classification)
  • List of immediately surrounding areas with similar summaries
• Print results as a report
• Access to underlying data for download
• Links to explanations for the calculation, area classification
Area S00112428
G11 6BP

2016 Cycle Commutes: 15
National: 68%
Glasgow City: 65%
Inner-City Students: 43%
Area S00115332
G51 3SF

2016 Cycle Commutes: 1192

- National: 99%
- Glasgow City: 99%
- Constrained Flat Dwellers: 99%
Area S00116748
G11 7QA

2016 Cycle Commutes: 13
National 65%
Glasgow City 62%
Comfortable Commuters 48%
Design factors – User Experience

• Two-component user interface:

A. MAP PANEL
  Orientation, easy comparison using colour scales

A. DATA PANEL
  Data Gauges, calibrated on deciles (0%, 10%, 20% etc.):
  • Scotland: how does this area compare nationally?
  • Local Authority: how is this area compared to other surrounding areas?
  • Area Classification Group: how is this area compared to others of the same classification?
Design factors – Presentation of Data

• Area Classification Scheme
  • Developed by Consumer Data Research Centre (CDRC) – good re-use of ESRC funded work
  • Alternative, more well-known classification scheme?

• Area of comparison
  • Fine-grained results are available based on a statistical geography (Output Area)
  • Alternative more approachable geography such as Postcode, Postcode Sector or Postcode District?
Suggested Technical Architecture

• Keep the moving parts to a minimum
  • Improved user experience
  • Reduced hosting and delivery cost

• Re-use building data prepared by CDRC for area classification scheme
  • Pre-cached data for enhanced performance

• Leaflet or OpenLayers for map

• D3 components for gauges
  • Vector map tiles (GeoJSON or TopoJSON)
Where next – prototype development

• Implementation of fully-working prototype
  • Include surrounding area comparison in list
  • Functionality for report preparation
  • User Experience design input

• Discussion with potential sponsors and publishers
  • Inclusion in travel packs and Green Travel Plans
Where next – further features and research

• Analysis of ‘destinations’ instead of the ‘origins’ of journeys presented here
• Composite Strive Index?
  • ML approach to development of classifier for areas, using the 2016 data as a training dataset
  • Additional calibration with survey data
  • Update weekly / monthly figures against that composite index
• Testing of usability of alternative area classification and data presentation schemes
• Alternative data presentation - treemap, with drill-downs
• Publish data in Linked Data format for participation in the wider open data community in Scotland
Thank you!

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