Strive City

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November 2017

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

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

STRIVE INDEX

Index Development

Data

Strava Metro	National Records of Scotland	Consumer Data Research Centre
Origin-Destination Data	2011 Census Output Areas	2011 Area Classification for Output Areas

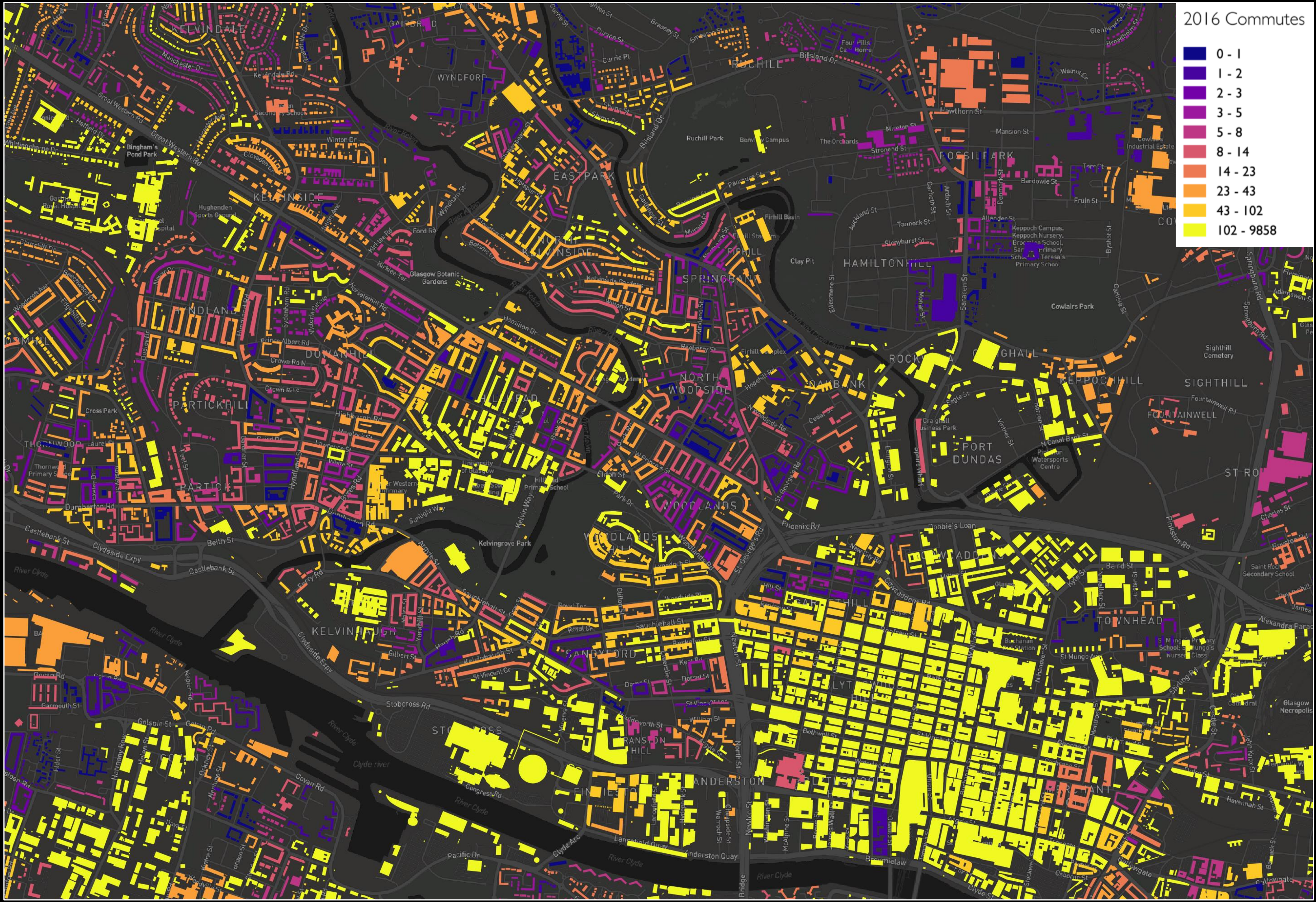
Initial Analysis

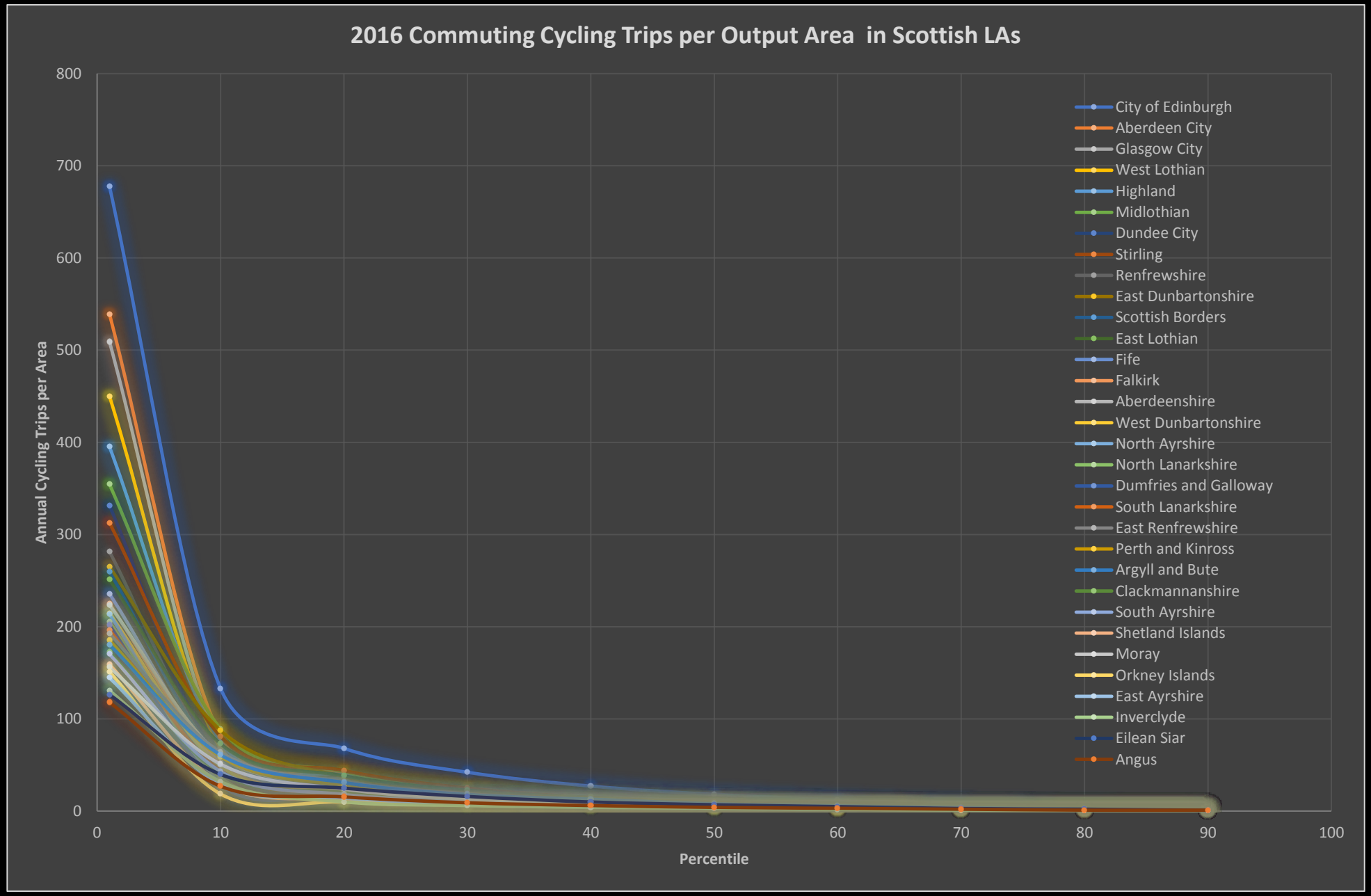
- Summarise Strava Metro data by commute counts at the origin points for the entire year
- Assign counts to Output Areas and to the Area Classifications
- Summary statistics at three levels:
  - National
  - Local Authority
  - Area Classification Supergroup, Group and Subgroup

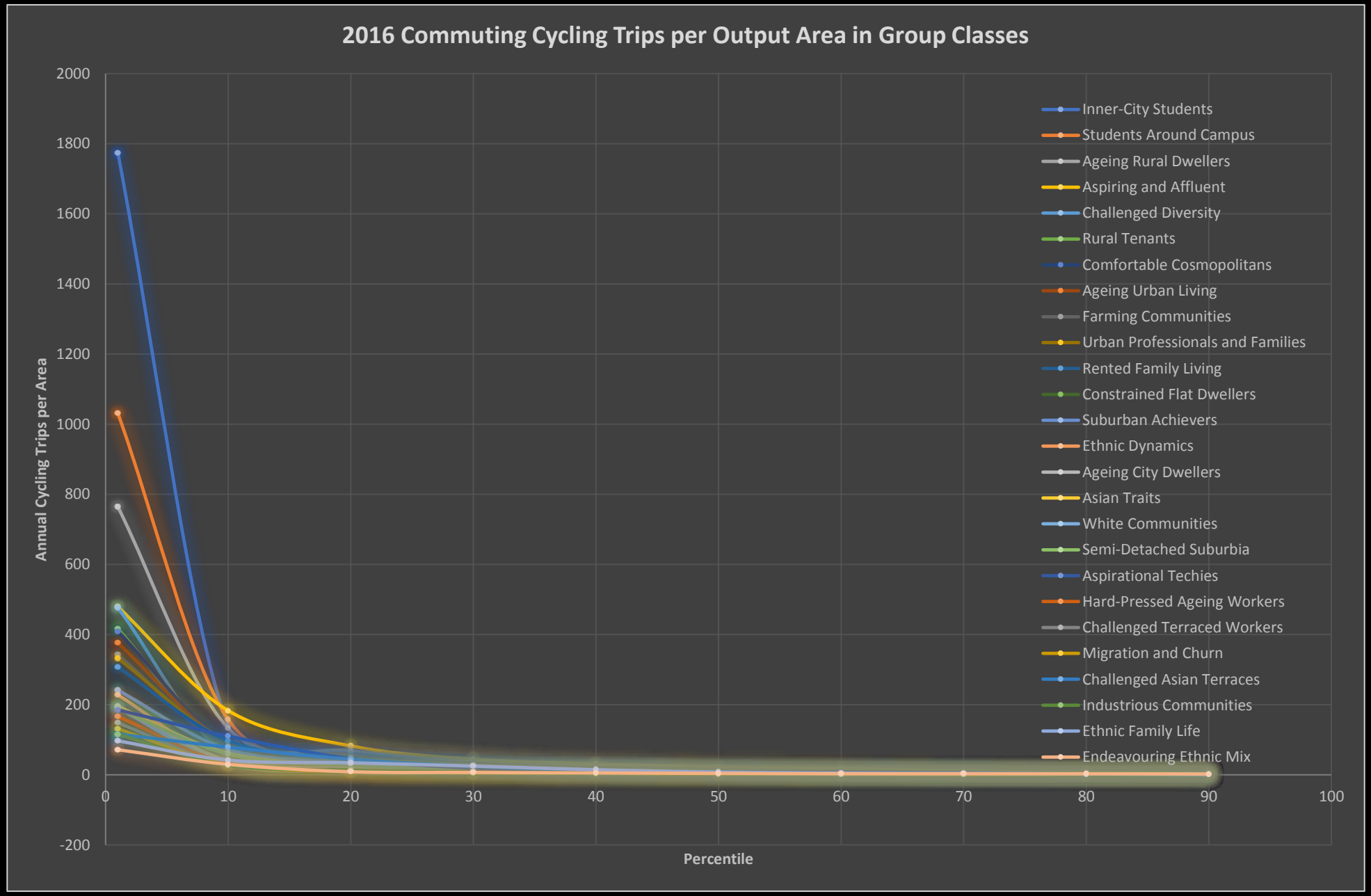
Technical Approach

- 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 Commutes
0 - 1
1 - 2
2 - 3
3 - 5
5 - 8
8 - 14
14 - 23
23 - 43
43 - 102
102 - 9858
KELVINDALE
WYNDFORD
RUCHILL
EAST PARK
POSSILPARK
KELVINSIDE
NORTH KELVINSIDE
HAMILTONHILL
SPRINGBANK
HYNDLAND
DOWANHILL
PARTICKHILL
NORTH WOODSIDE
PORT DUNDAS
SIGHTHILL
FOUNTAINWELL
PARTICK
WOODLANDS
KELVINHAUGH
SANDYFORD
TOWNHEAD
ANDERSTON
Kelvingrove Park
Glasgow Botanic Gardens
Ruchill Park
Cowlairs Park
Sighthill Cemetery
River Clyde


2016 Commuting Cycling Trips per Output Area in Scottish LAs
Annual Cycling Trips per Area
800
700
600
500
400
300
200
100
0
0
10
20
30
40
50
60
70
80
90
100
Percentile
City of Edinburgh
Aberdeen City
Glasgow City
West Lothian
Highland
Midlothian
Dundee City
Stirling
Renfrewshire
East Dunbartonshire
Scottish Borders
East Lothian
Fife
Falkirk
Aberdeenshire
West Dunbartonshire
North Ayrshire
North Lanarkshire
Dumfries and Galloway
South Lanarkshire
East Renfrewshire
Perth and Kinross
Argyll and Bute
Clackmannanshire
South Ayrshire
Shetland Islands
Moray
Orkney Islands
East Ayrshire
Inverclyde
Eilean Siar
Angus


2016 Commuting Cycling Trips per Output Area in Group Classes
Annual Cycling Trips per Area
2000
1800
1600
1400
1200
1000
800
600
400
200
0
-200
0
10
20
30
40
50
60
70
80
90
100
Percentile
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

Bookmark Manager

Bill

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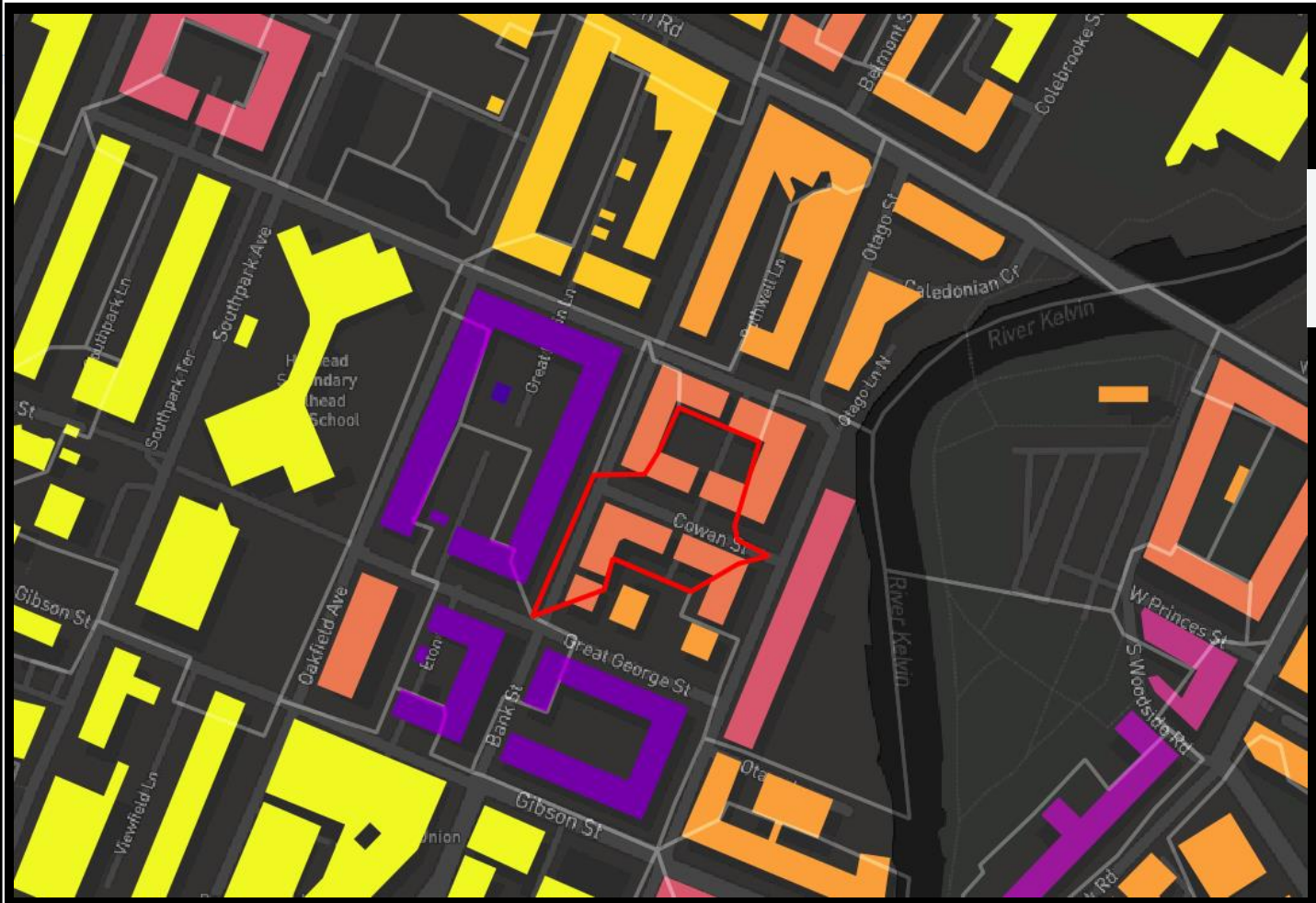
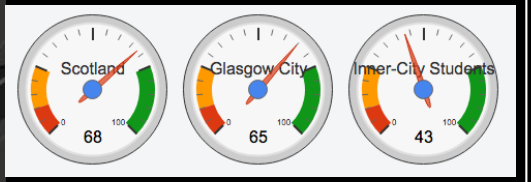


Area S00112428

G11 6BP



2016 Cycle Commutes: 15

National	68%
Glasgow City	65%
Inner-City Students	43%

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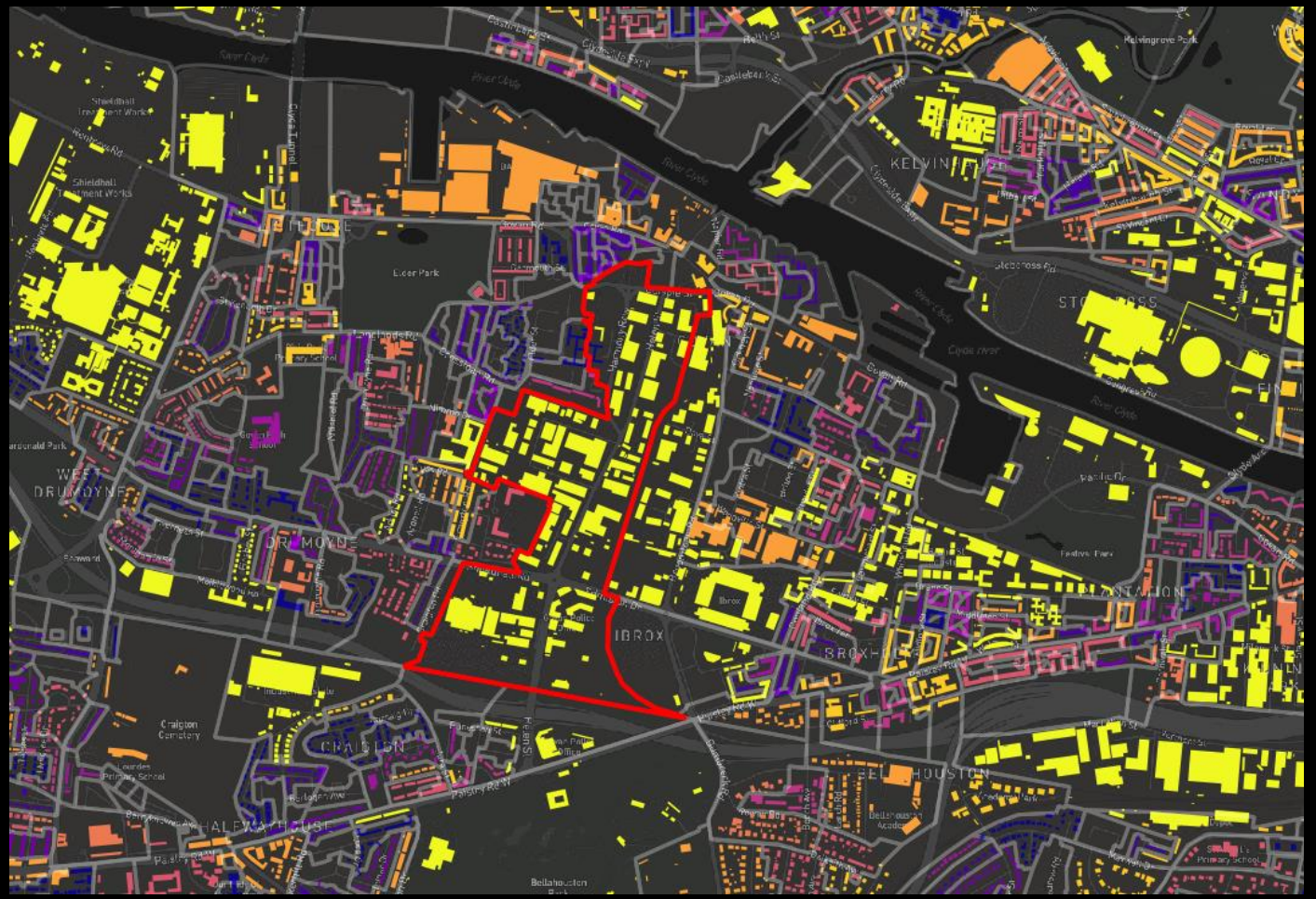

Area S00115332

G51 3SF

2016 Cycle Commutes: 1192

National	99%
Glasgow City	99%
Constrained Flat Dwellers	99%

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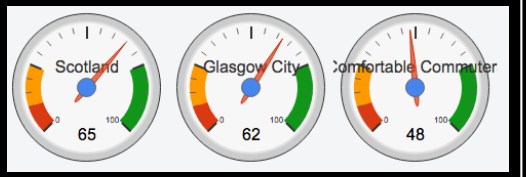
Area S00116748

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

Attribution:
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Thank you!

Bill Oates
9th November 2017

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