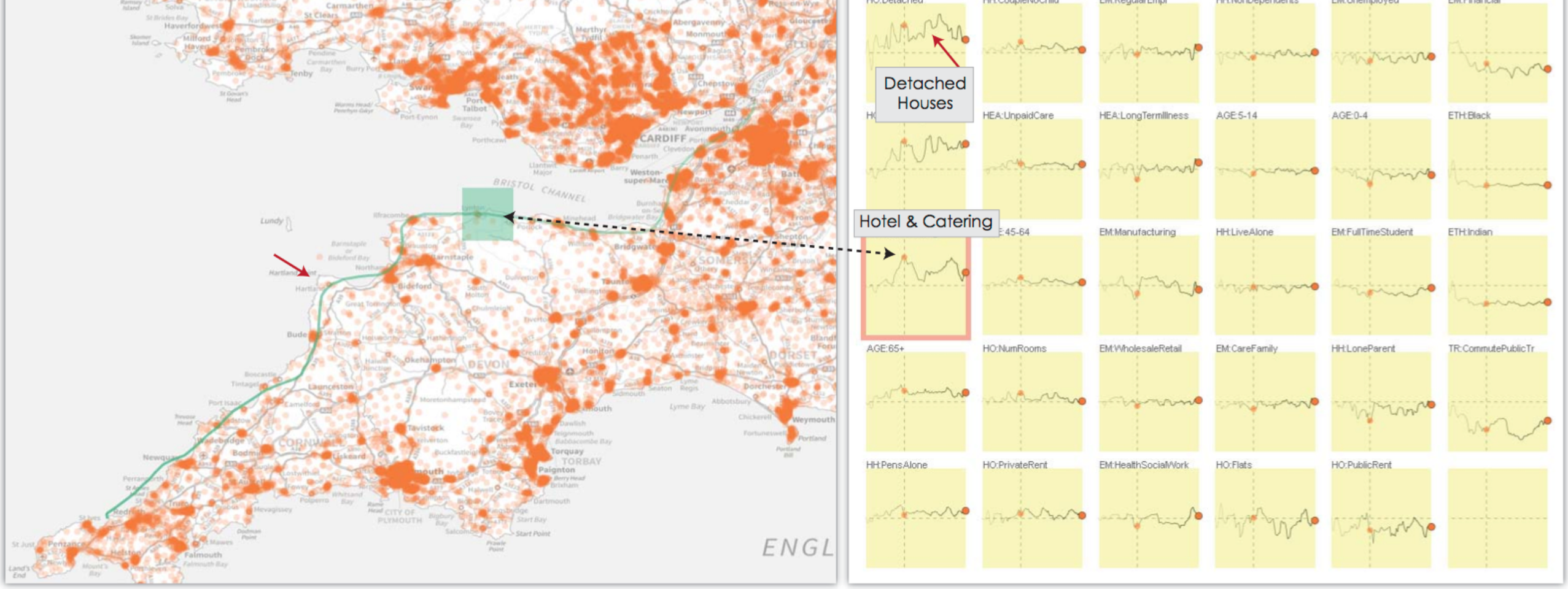


Attribute Signatures

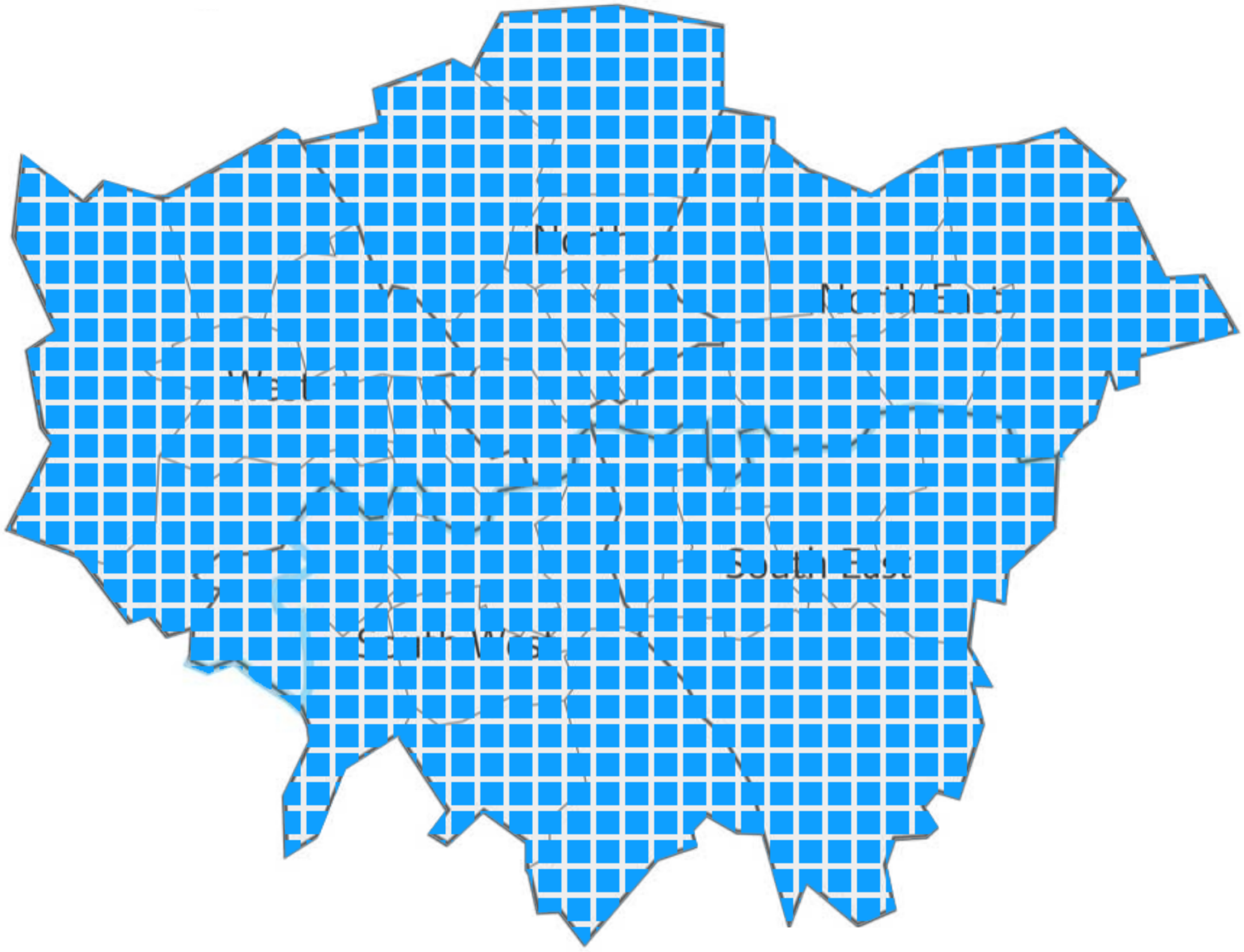
Dynamic Visual Summaries for Analyzing Multivariate Geographical Data

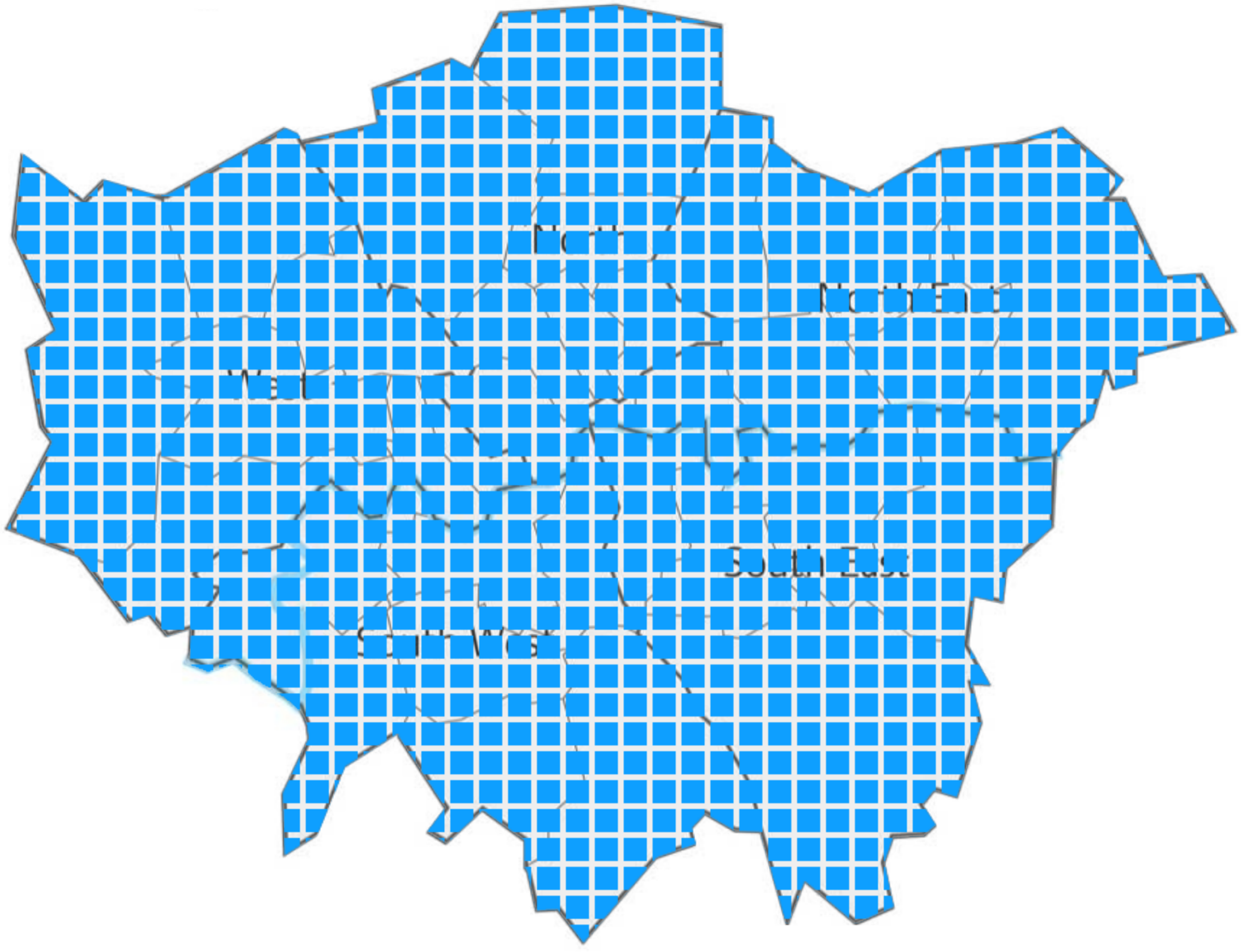
CPSC 547 Presentation
Peter Beshai
November 17, 2014

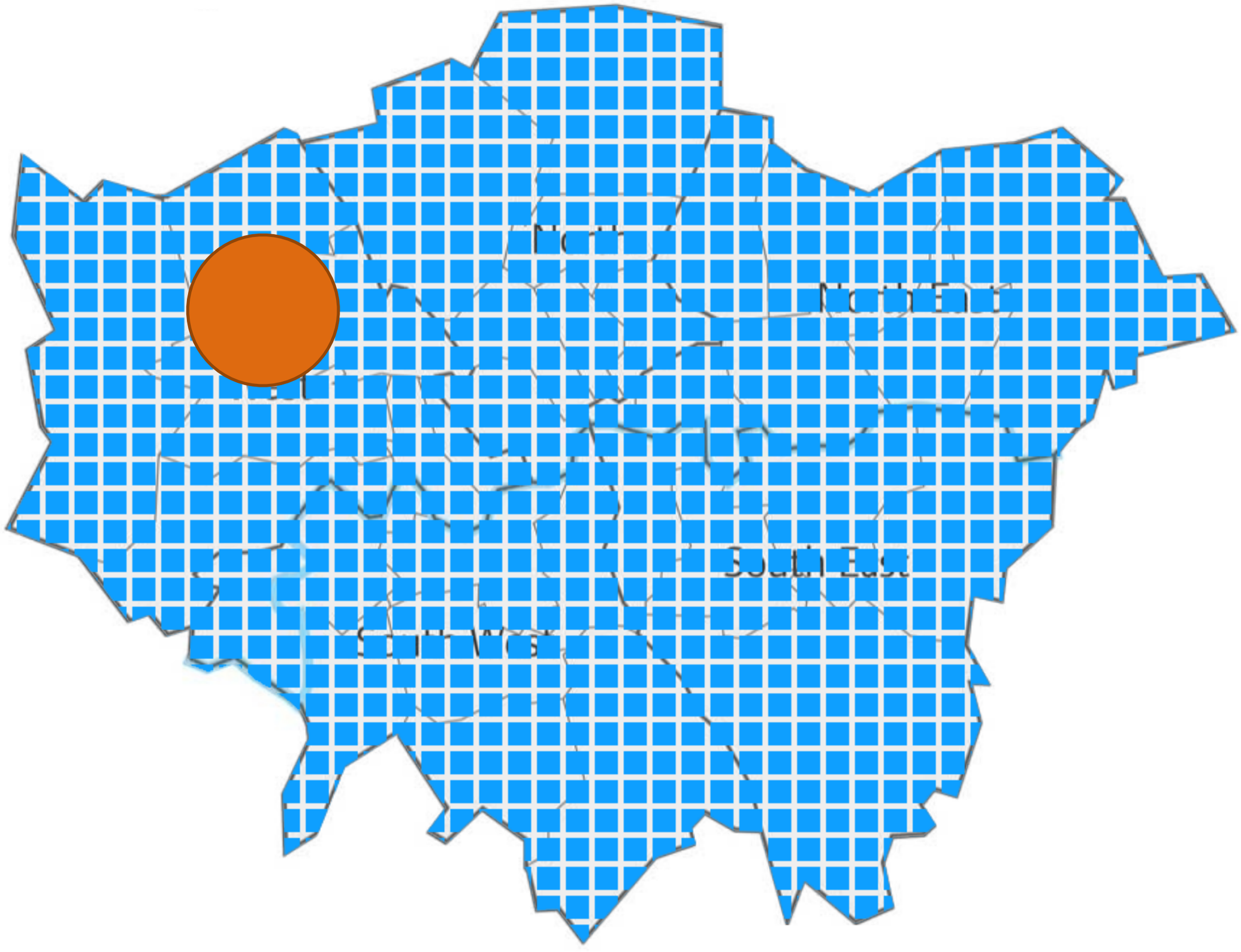
321	73	68	41	260	92
43	3126	341	754	44	27
55	564	896	77	46	84

72	197	12	22	61	733
65	51	68	62	49	31
45	88	72	52	18	17

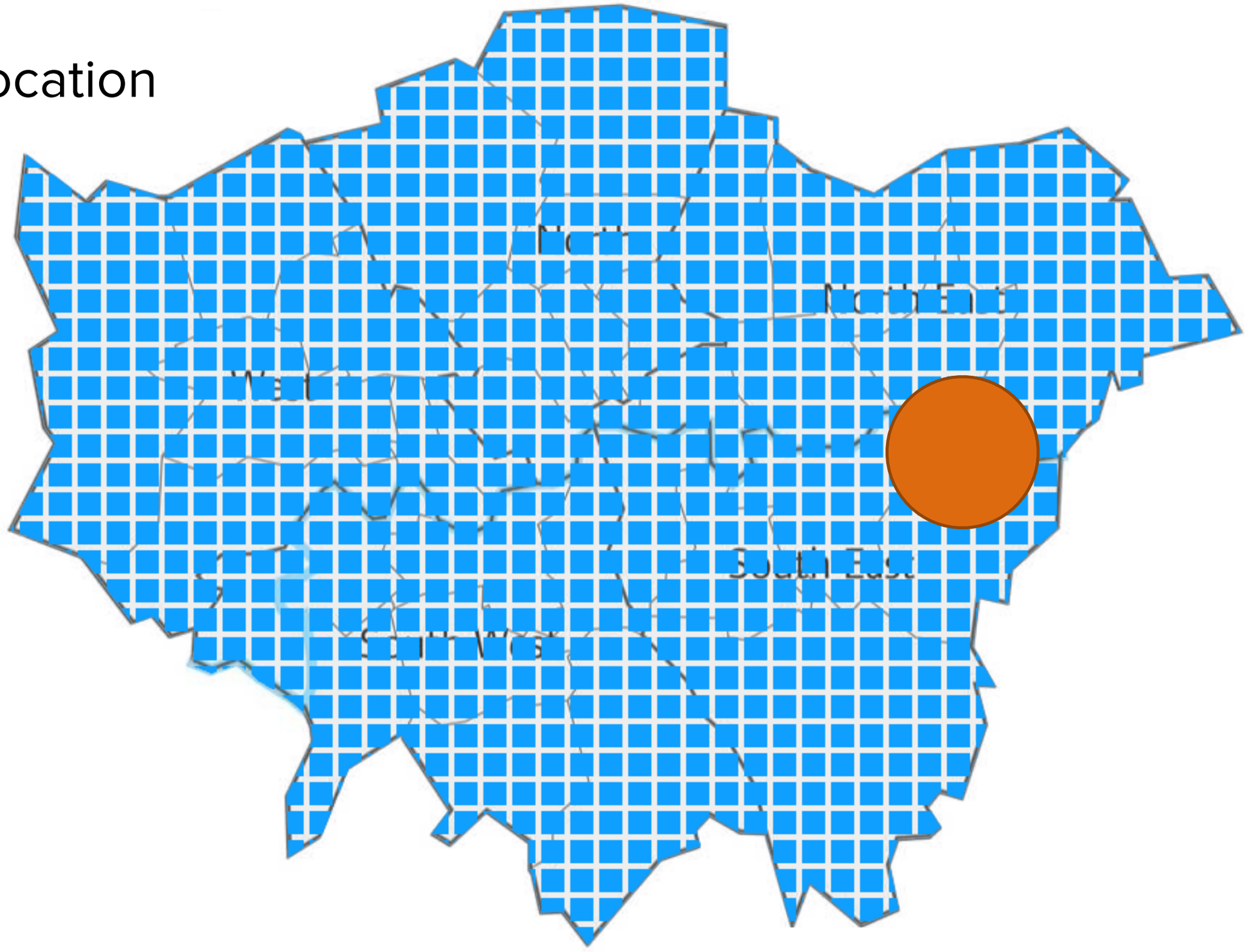
North
North East
West
South East
South West


North
North East
West
South East

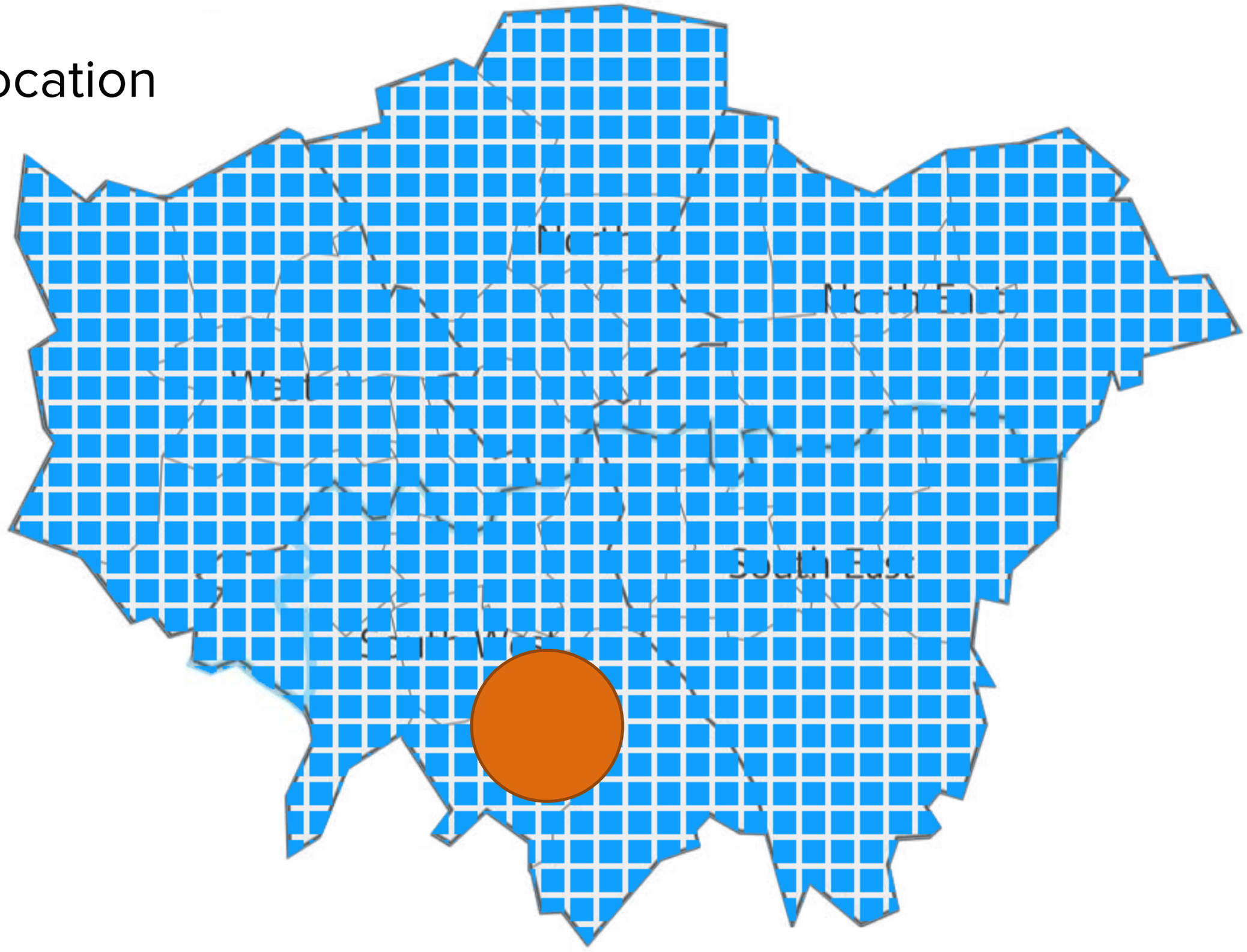

North
North East
West
South East


North
North East
South East

Location

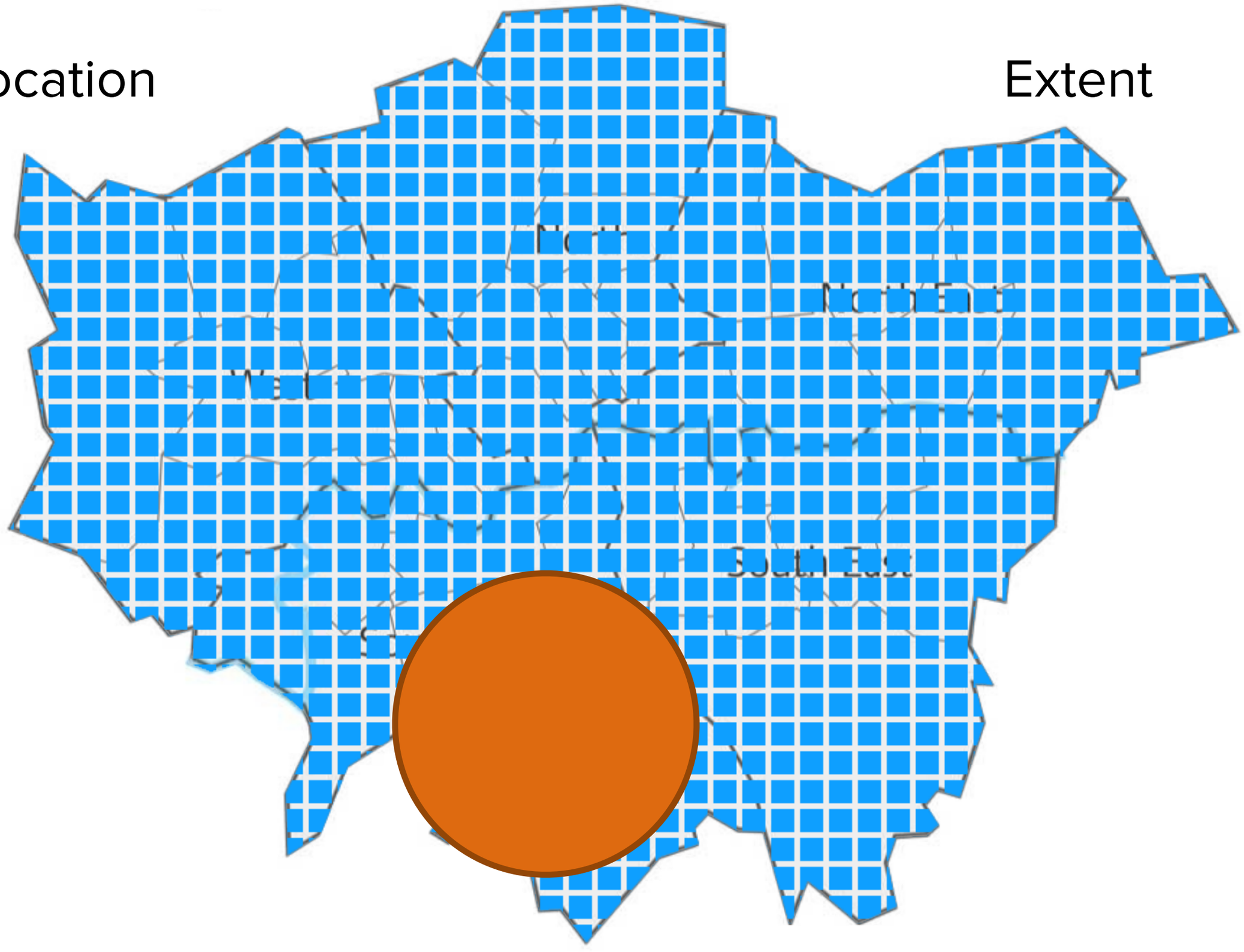


Location



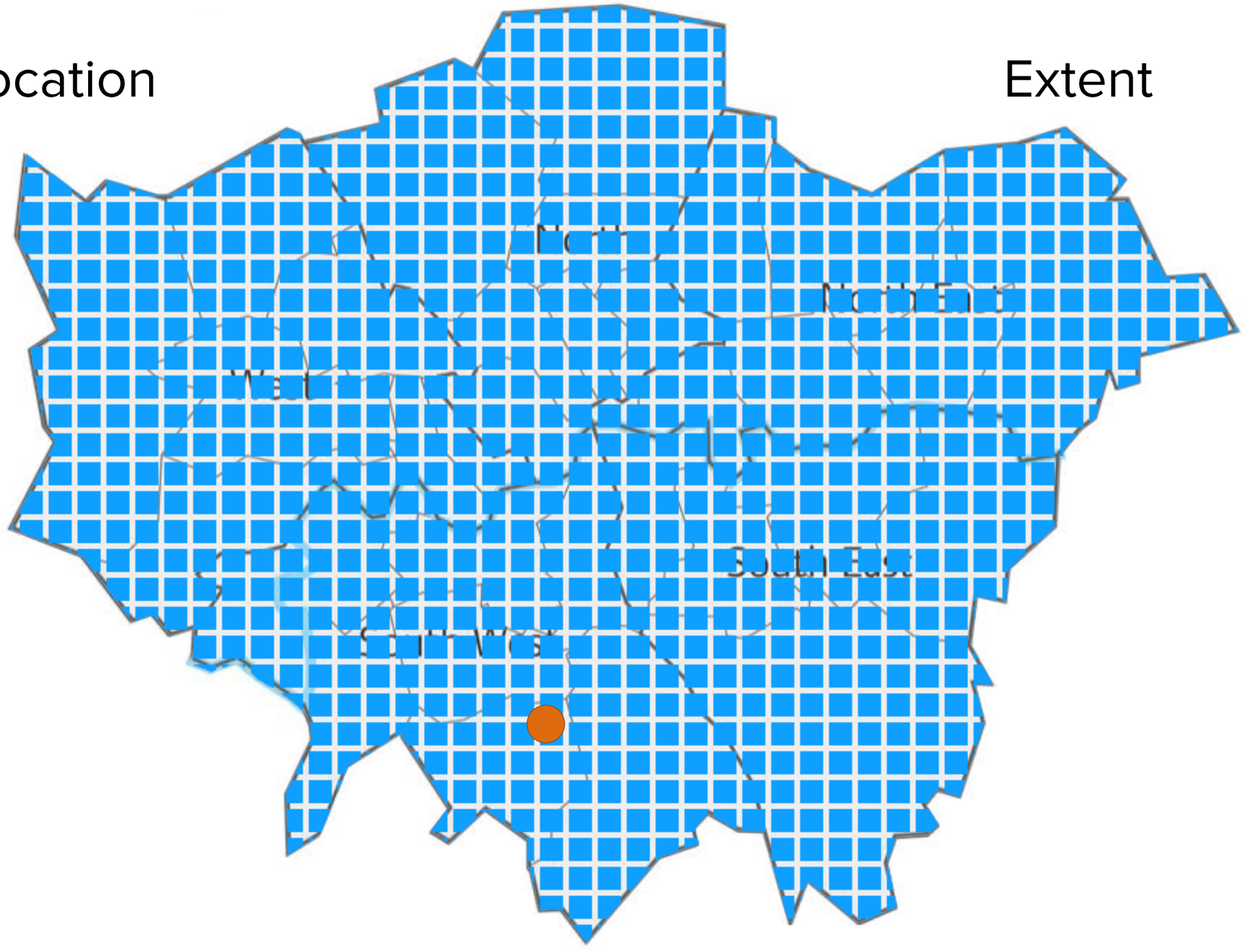
Location

Extent



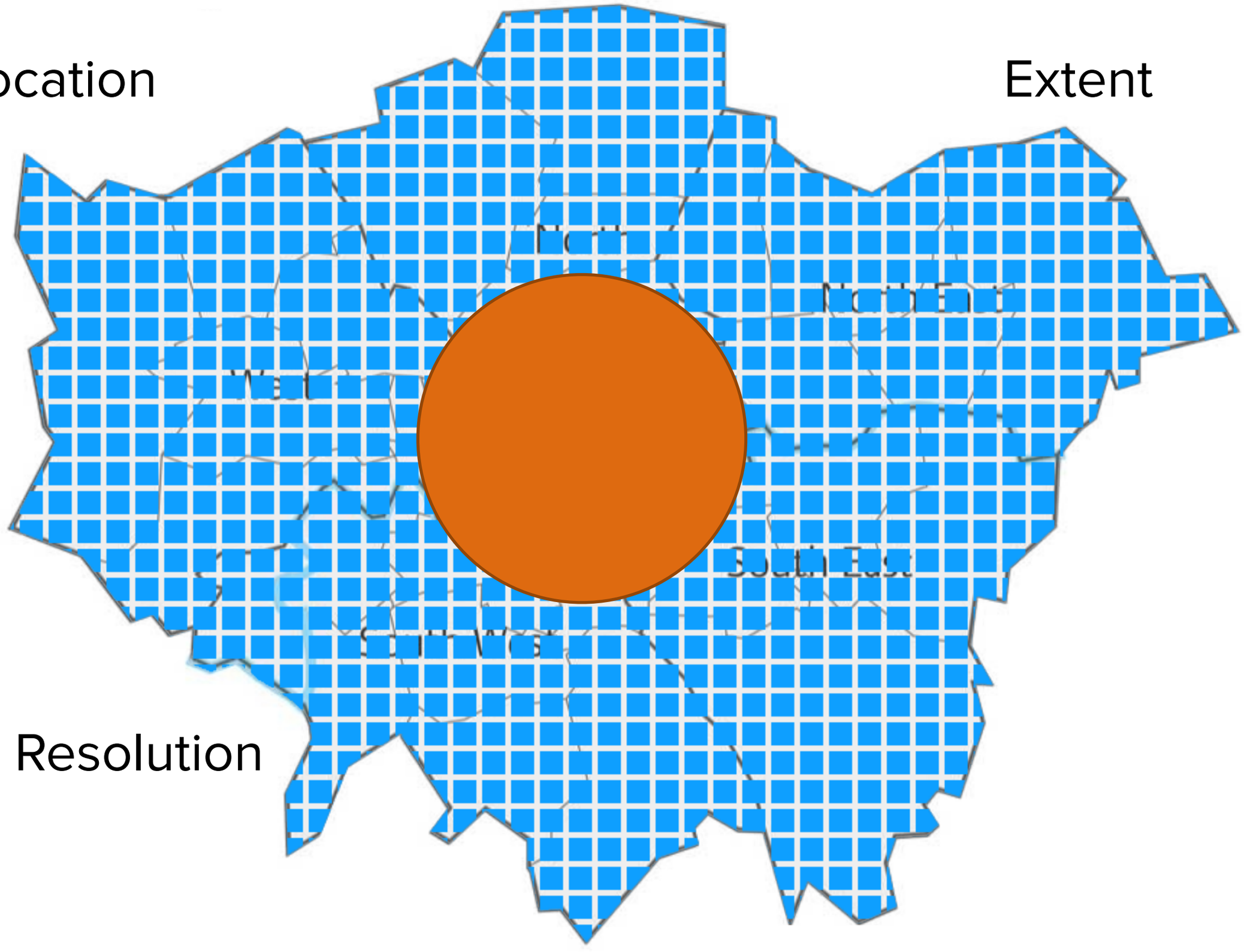
Location

Extent



Location

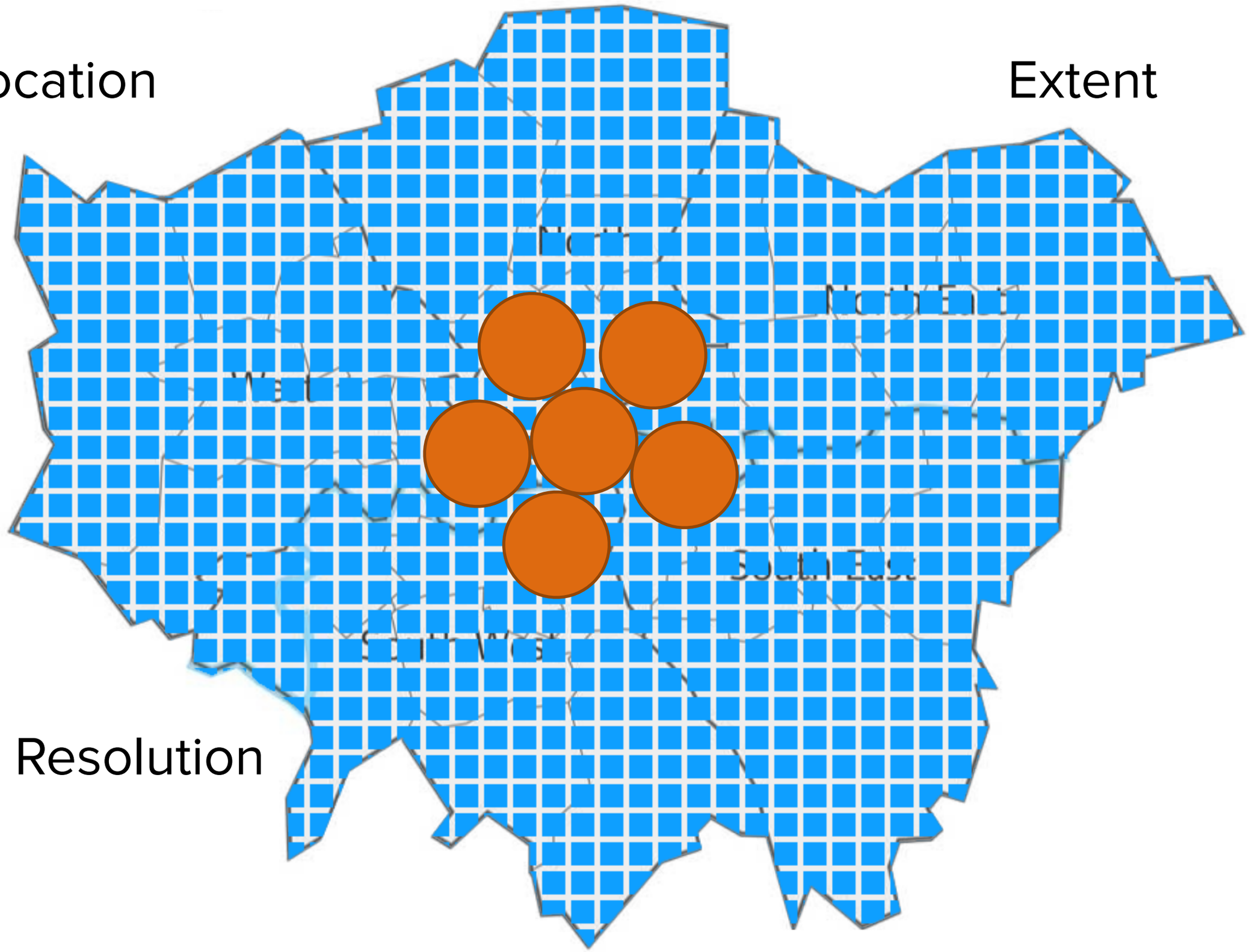
Extent



Resolution

Location

Extent



Resolution

Analysis: What?

Tables

2001 & 2011 census data: England and Wales

41 attributes

181,000 regions

Geometry

Geographic data of England and Wales

Derived

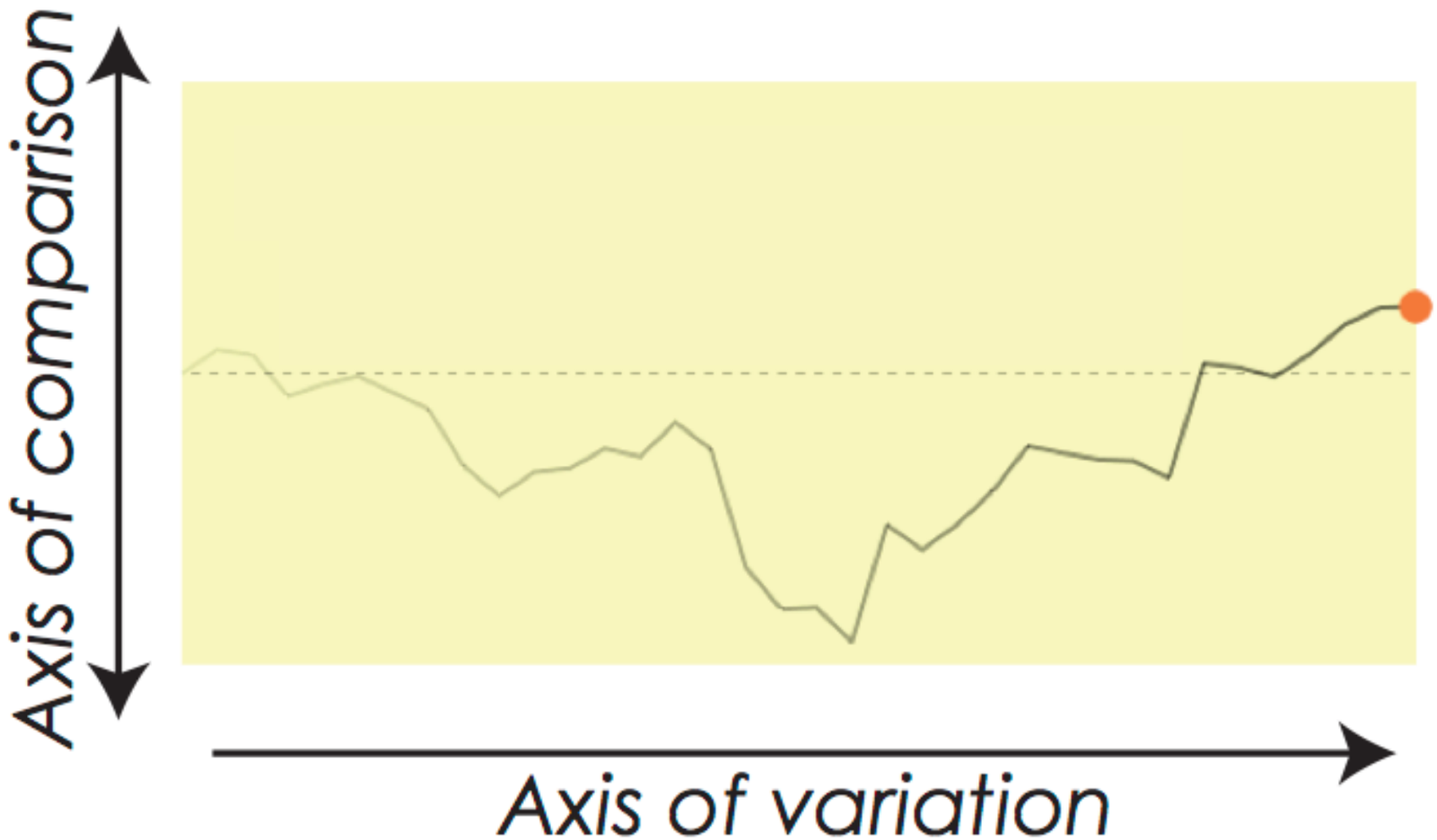
Statistics at different aggregation resolutions

General Concept

Select a **constraint**: Location, Extent, Resolution

Select a **variation** type: Discrete, Continuous

Select a **statistic**: Effect Size, Median, Interquartile Range



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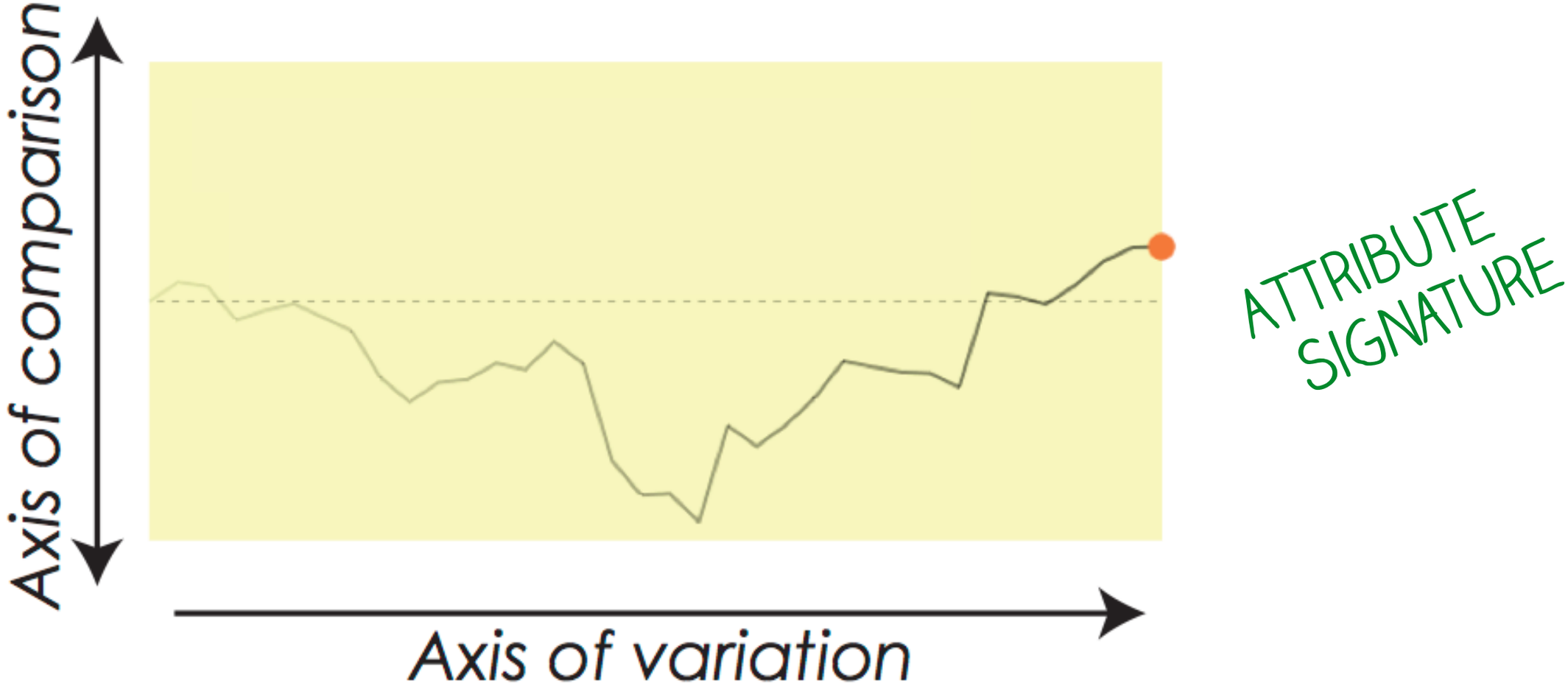

Video Demonstration

Attribute Signatures: Dynamic Visual Summaries for Analyzing Multivariate Geographical Data

Cagatay Turkay, Aidan Slingsby, Helwig Hauser, Jo Wood, Jason Dykes

CITY UNIVERSITY LONDON

EST 1894

http://vimeo.com/102220835

Video Demonstration

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EST 1894

http://vimeo.com/102220835

Analysis: Why?

Major Task

1. Discover and compare trends, features, and differences in multiple attributes across different geographic variations

Analysis: Why?

Major Task

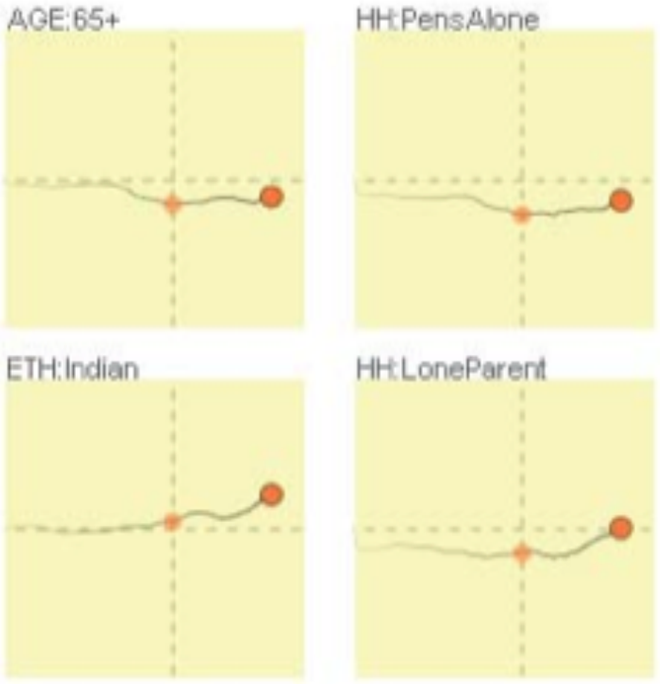
1. Discover and compare trends, features, and differences in multiple attributes across different geographic variations

Minor Tasks

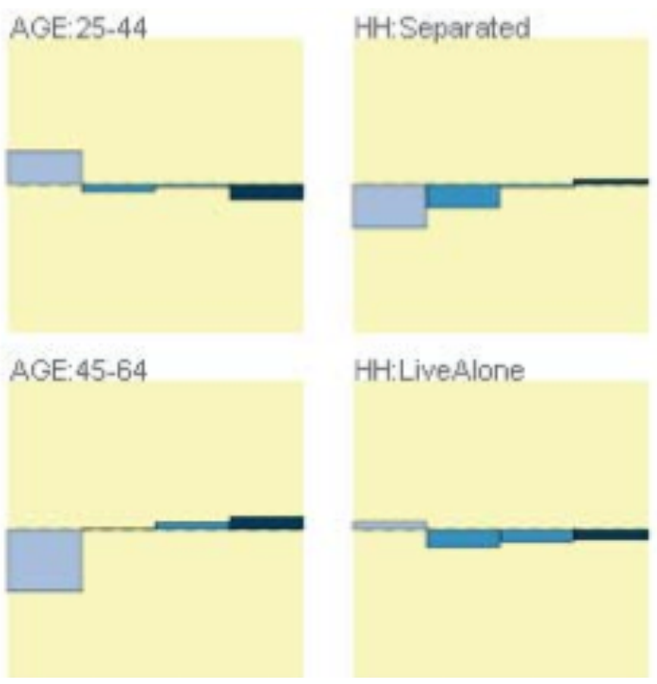
2. Discover effects of aggregation on statistical summaries at a single location

3. Compare attribute differences over time and across geographic variation

Analysis: How - Encode



Line Charts



Bar Charts

Coloured Marks on Map

Analysis: How - Facet

Small multiples

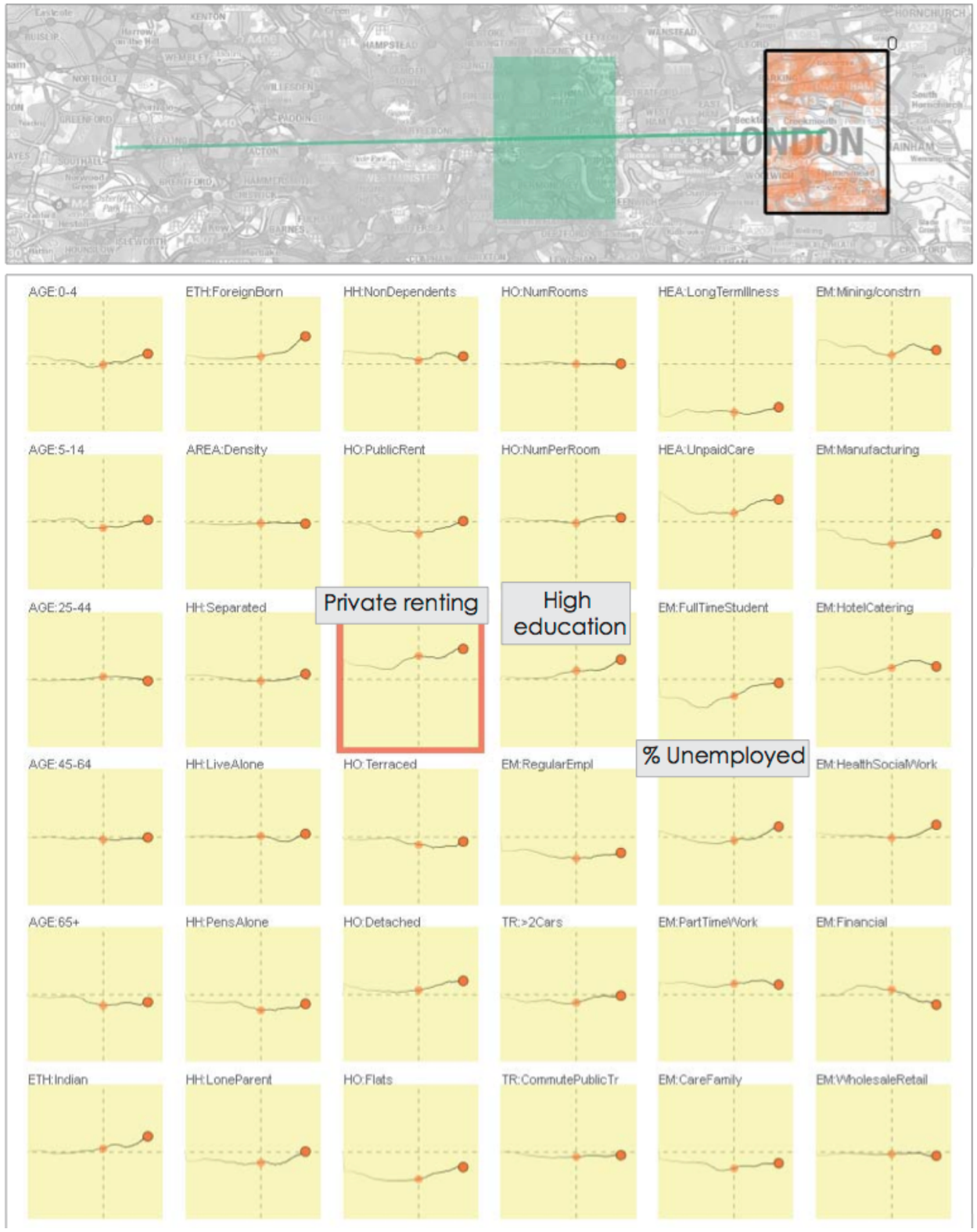
Partitioned by attribute

Coordinate

Linked highlighting

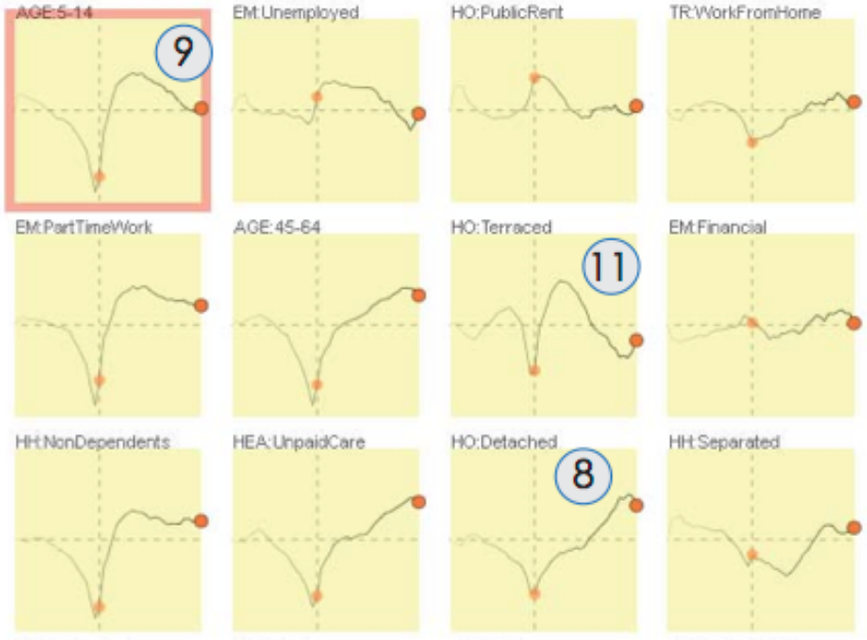
Shared navigation

Overview map

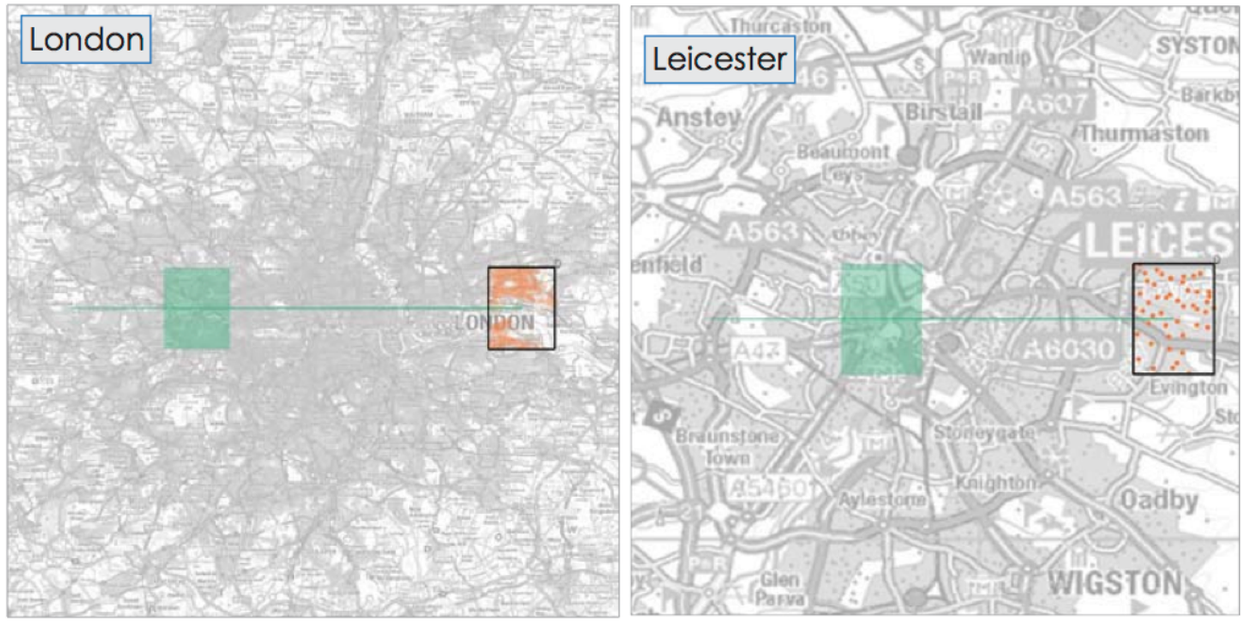


Analysis: How - Manipulate

Reorder



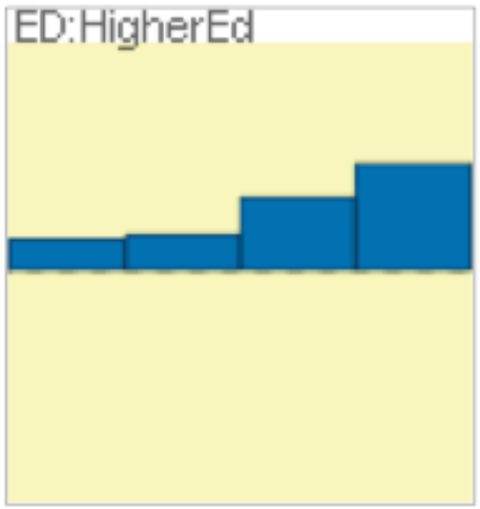
Select Regions



Change over time, geographic manipulation

Analysis: How - Reduce

Aggregate data at different resolutions *(Task 2)*



Critique: Weaknesses

Numbers

Visible thresholds

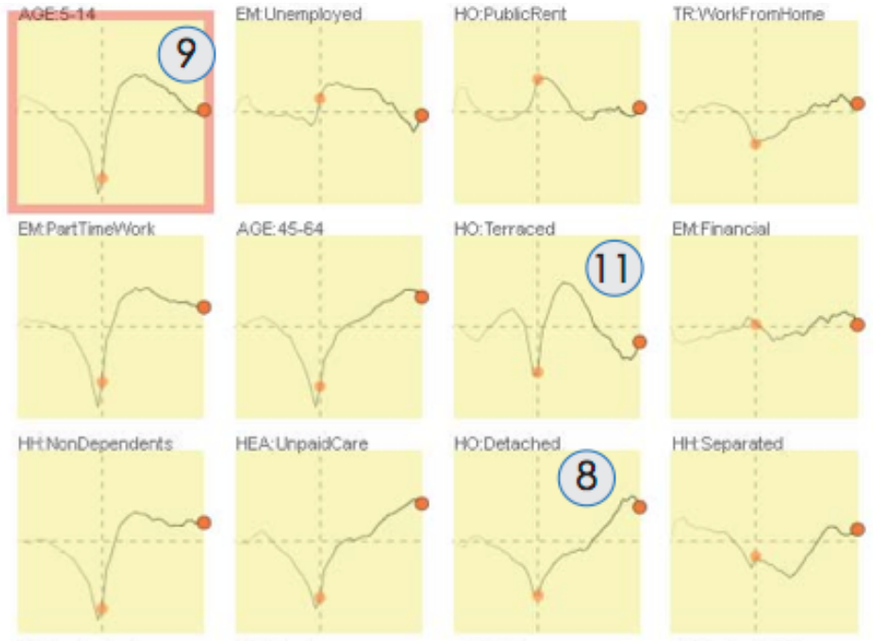
Landmarks

Arbitrarily reorder

Modify paths

One dataset

Reproduce analysis



Critique: Strengths

Animation axis

Spatial dimensions

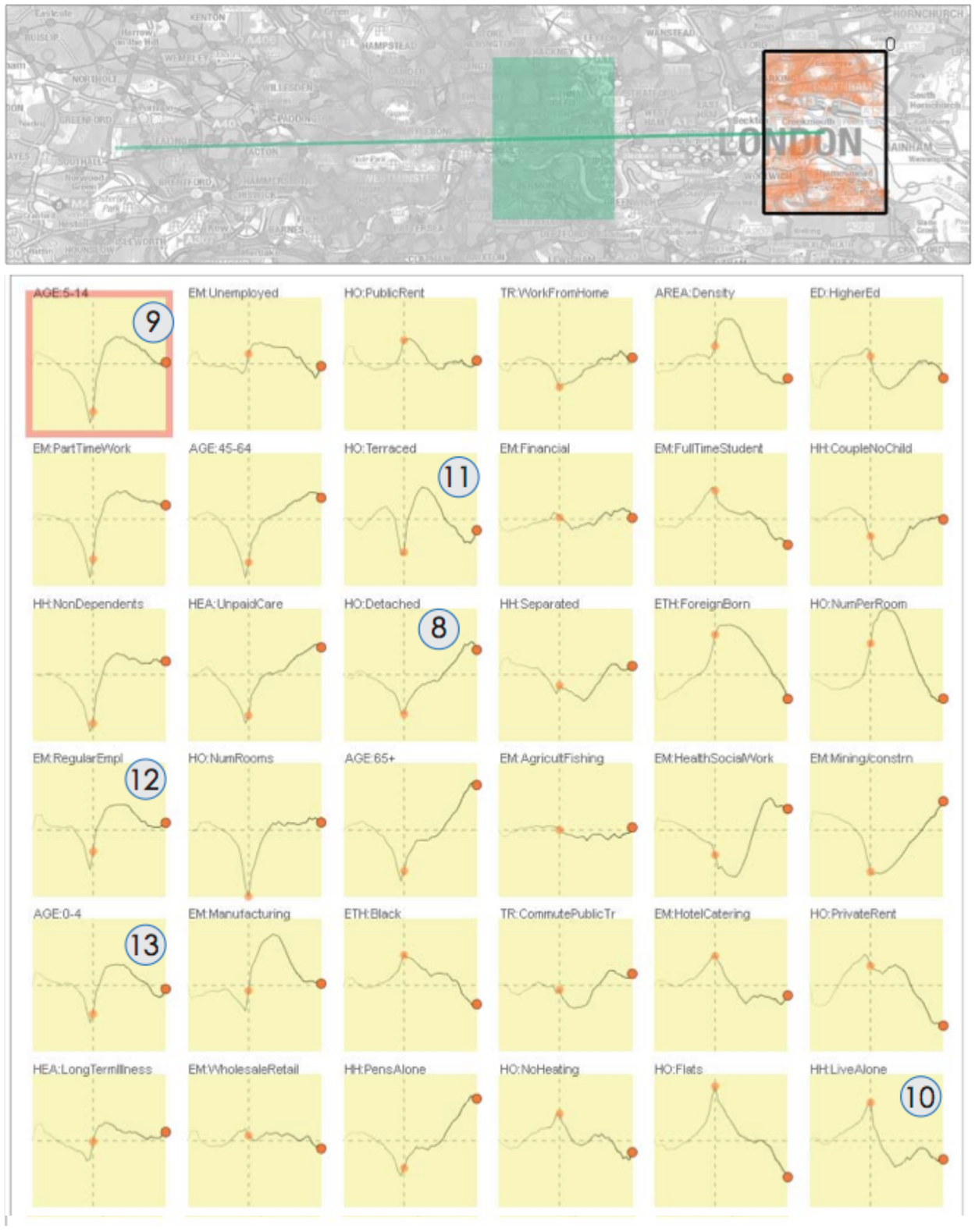
Linked highlighting

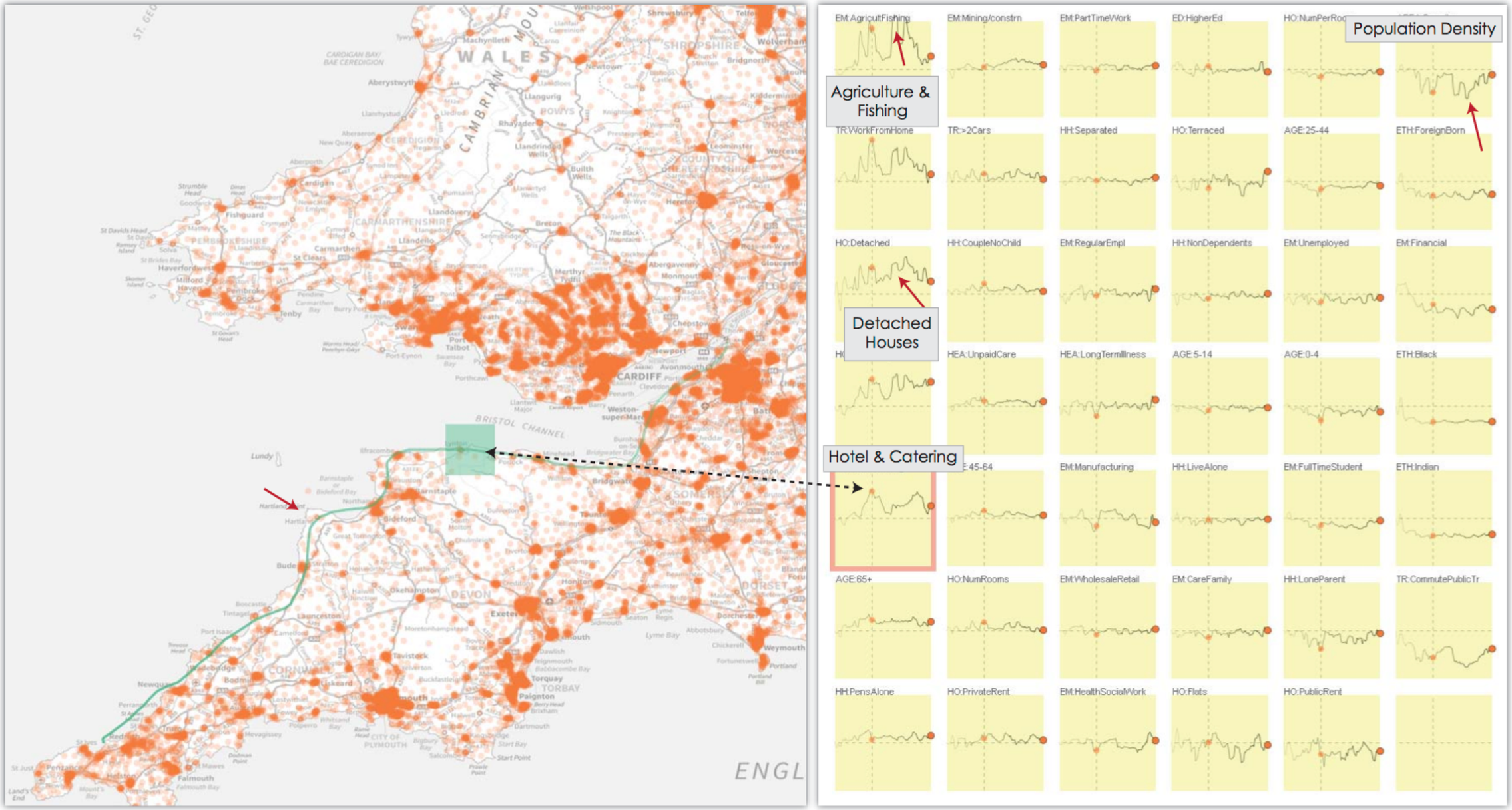
Alignment

Reordering by similarity

Natural interactions

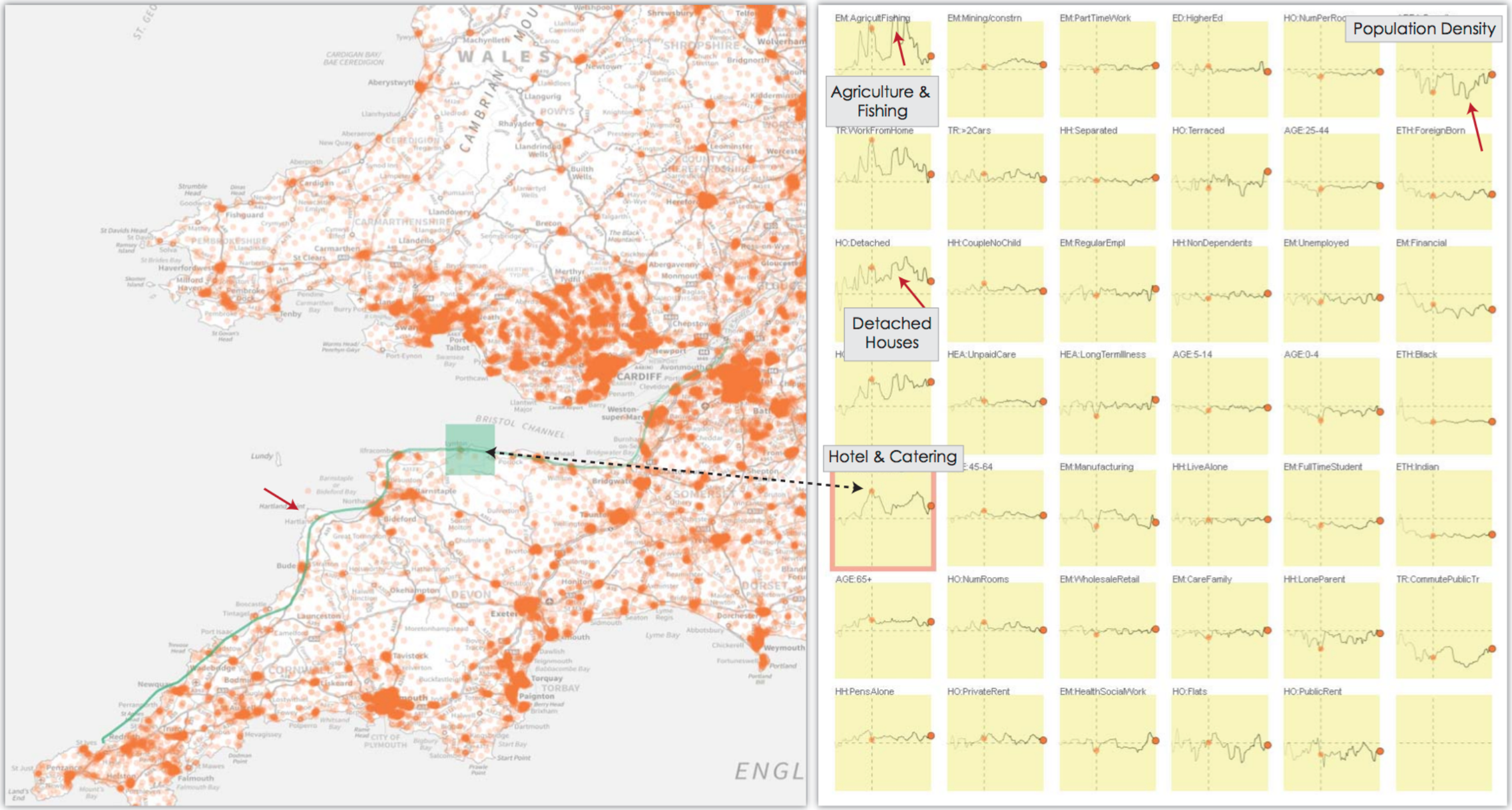
Pixel use





Attribute Signatures

Thanks!



Attribute Signatures

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CPSC 547: http://www.cs.ubc.ca/~tmm/courses/547-14/

Paper: http://dx.doi.org/10.1109/TVCG.2014.2346265