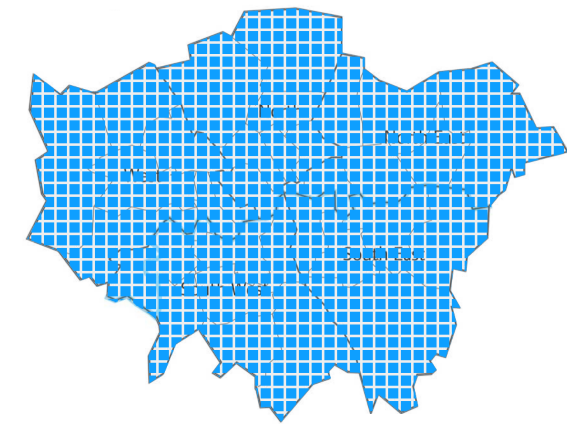


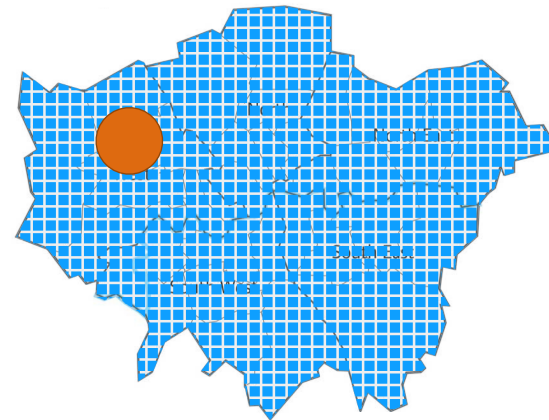
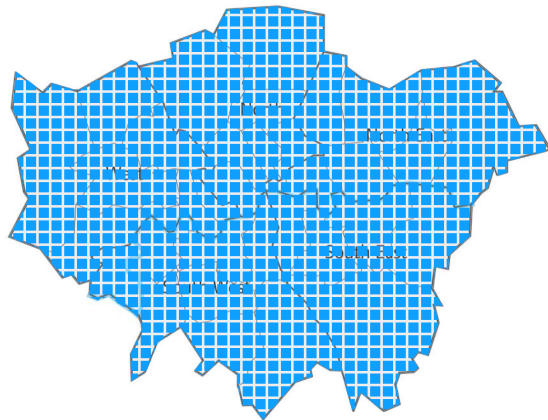
321	73	68	41	260	92
43	3126	341	754	44	27
55	564	896	77	46	84
72	197	12	22	61	733
65	51	68	62	49	31
45	88	72	52	18	17



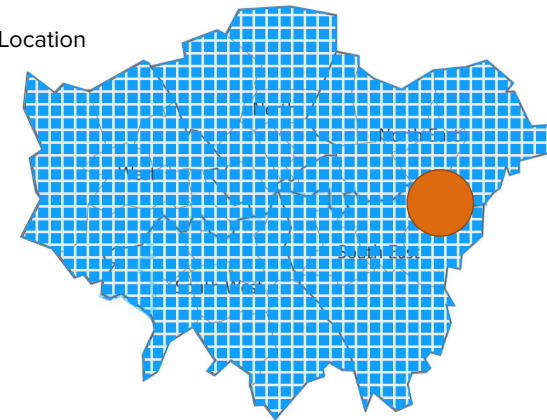
# Attribute Signatures

Dynamic Visual Summaries for Analyzing Multivariate Geographical Data

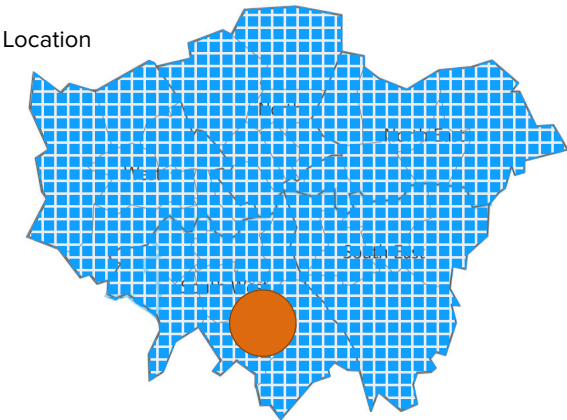
CPSC 547 Presentation  
Peter Beshai  
November 17, 2014



Location

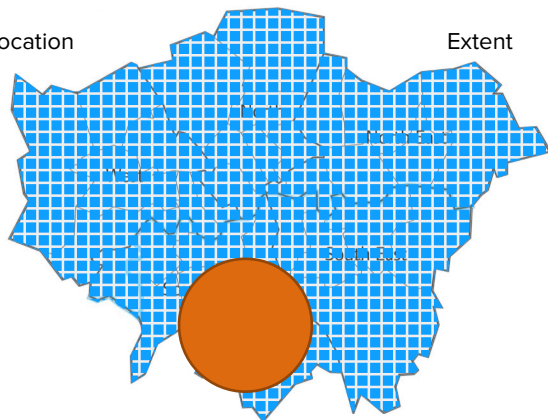


Location



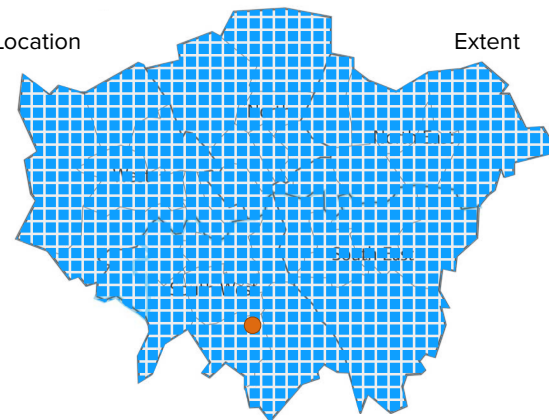
Location

Extent



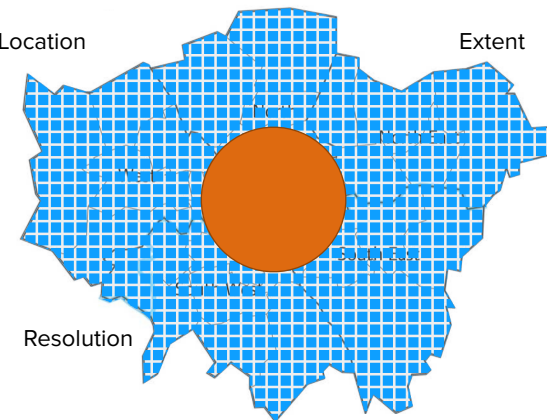
Location

Extent



Location

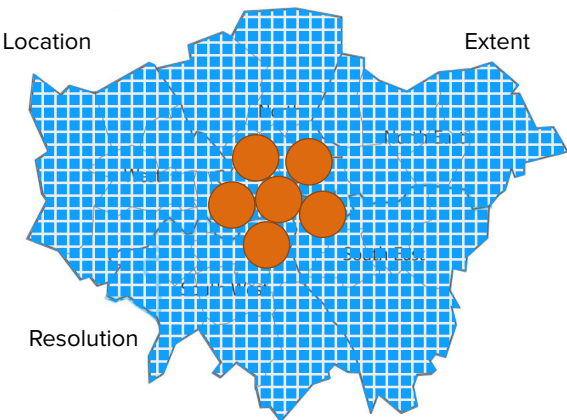
Extent



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

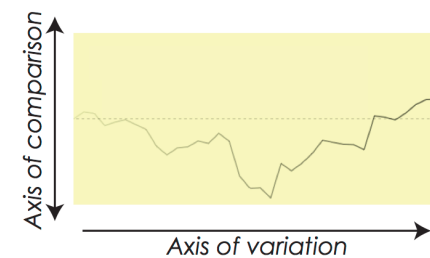
Statistics at different aggregation resolutions

## General Concept

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

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

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

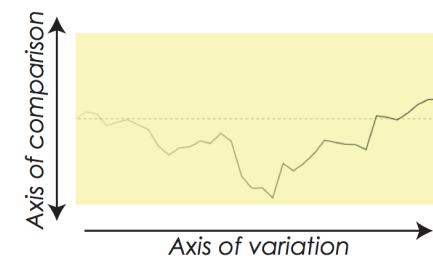


## General Concept

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

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

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



ATTRIBUTE SIGNATURE

## Video Demonstration

# Attribute Signatures: Dynamic Visual Summaries for Analyzing Multivariate Geographical Data

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



<http://vimeo.com/102220835>

# Attribute Signatures: Dynamic Visual Summaries for Analyzing Multivariate Geographical Data

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



<http://vimeo.com/102220835>

#### Major Task

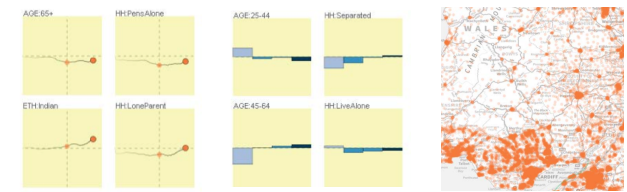
1. Discover and compare trends, features, and differences in multiple attributes across different geographic variations

#### 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



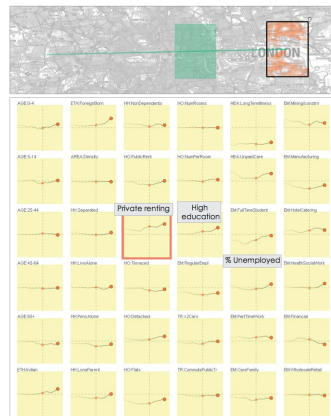
Line Charts      Bar Charts      Coloured Marks on Map

Small multiples  
Partitioned by attribute

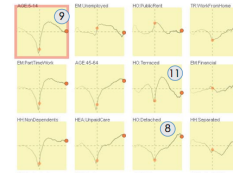
Coordinate  
Linked highlighting

Shared navigation

Overview map



#### Reorder



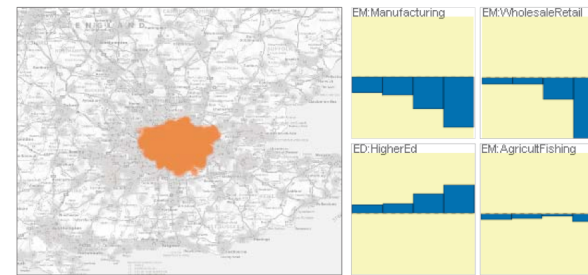
#### Select Regions



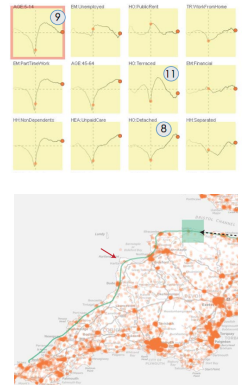
#### Change over time, geographic manipulation



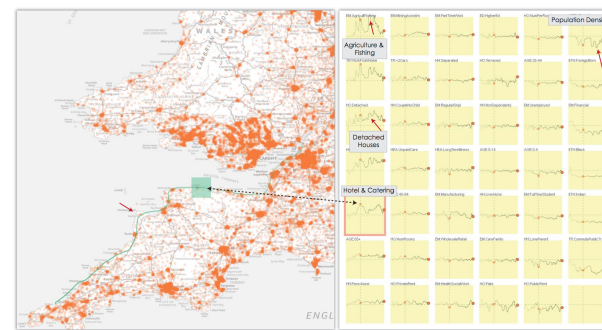
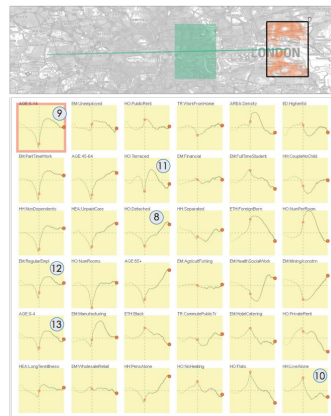
Aggregate data at different resolutions (Task 2)



- Numbers
- Visible thresholds
- Landmarks
- Arbitrarily reorder
- Modify paths
- One dataset
- Reproduce analysis

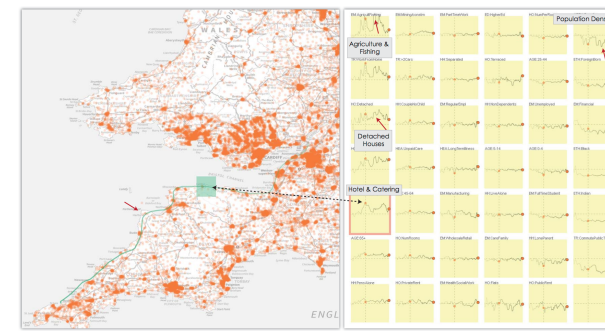


- Animation axis
- Spatial dimensions
- Linked highlighting
- Alignment
- Reordering by similarity
- Natural interactions
- Pixel use



### Attribute Signatures

## Thanks!



### Attribute Signatures Dynamic Visual Summaries for Analyzing Multivariate Geographical Data

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

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