

# Geographic Data Science

Regionalisation

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# Regionalization

# Unsupervised Spatial Machine Learning

*Aggregating basic spatial units (**areas**) **into** larger units (**regions**)*

# Regionalization

Split a dataset into groups of observations that are similar within the group and dissimilar between groups, based on a series of attributes...

...with the additional constraint observations need to be spatial neighbors

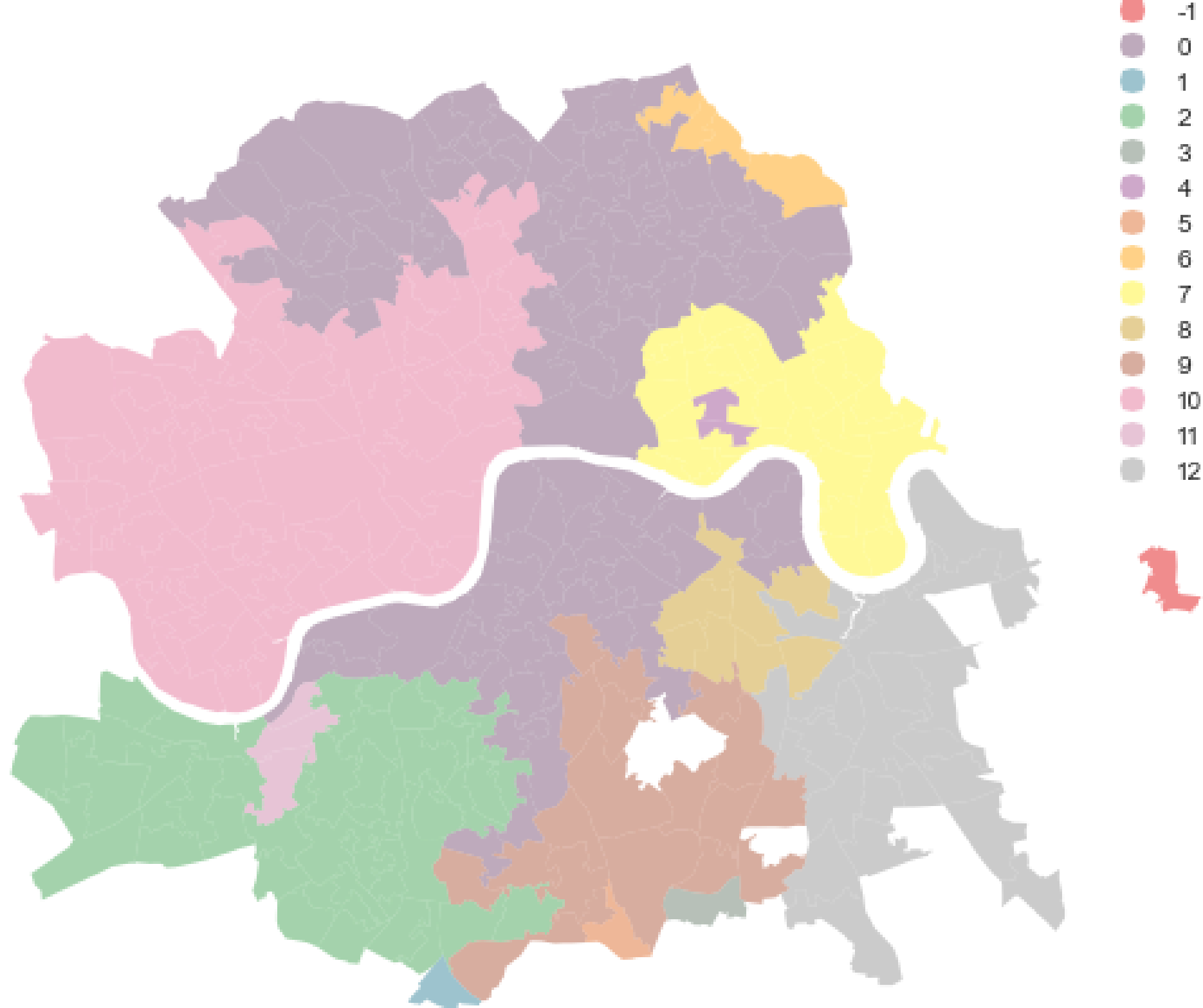
# Regionalization

Duque et al. (2007)

# Regionalization

- All the methods aggregate geographical areas into a predefined number of regions, while optimizing a particular aggregation criterion;
- The areas within a region must be geographically connected (the spatial contiguity constraint);
- The number of regions must be smaller than or equal to the number of areas;
- Each area must be assigned to one and only one region;
- Each region must contain at least one area.

Duque et al. (2007)



# Algorithms

- Automated Zoning Procedure (AZP)
- Arisel
- Max-P
- ...

See [Duque et al. \(2007\)](#) for an excellent, though advanced, overview



# Examples

# Census geographies

*Environment and Planning A* 1995, volume 27, pages 425–446

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## Algorithms for reengineering 1991 Census geography

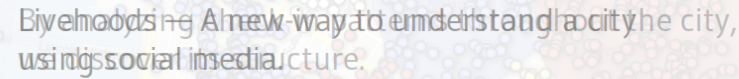
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