

# DATA OVERLAP

## Halftone technique in georeferenced data visualization

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The project started from the analysis of the case study of **Sectarianism in Scotland**. The results of the research showed the need of a **multidimensional** view which could explore the links and the weights of each element involved in the definition of the Sectarian system.

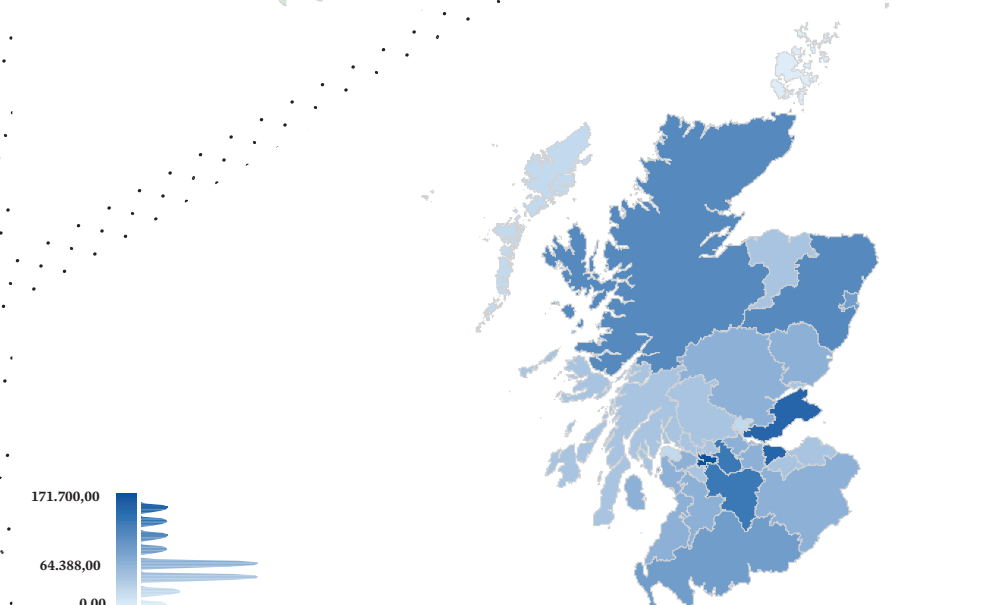
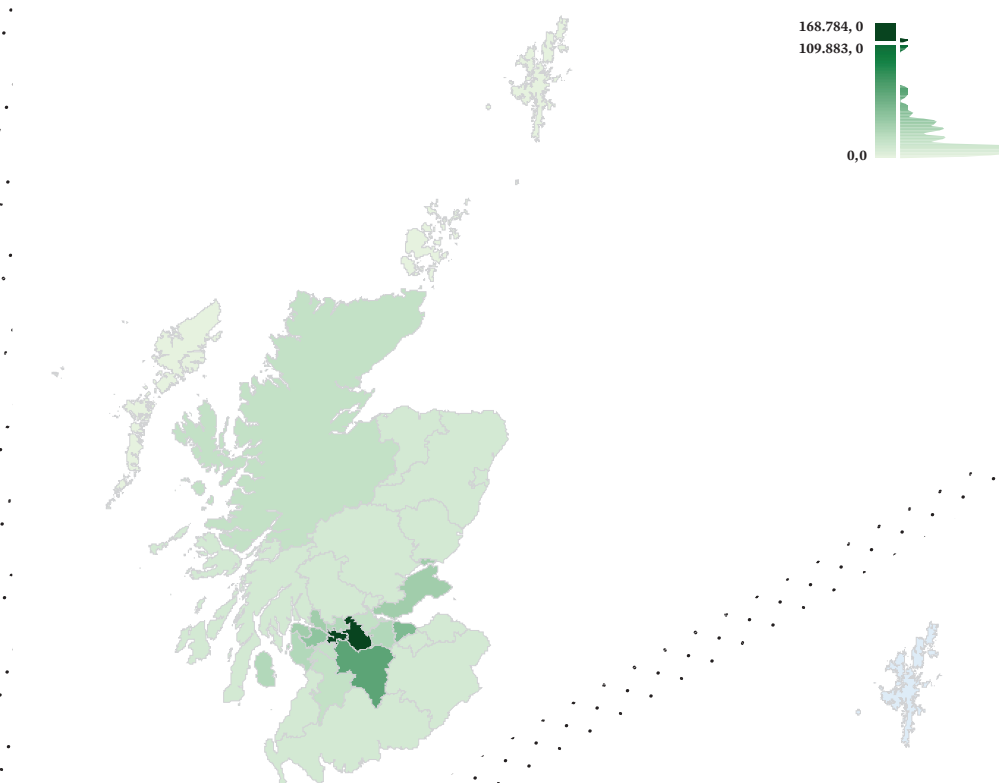
Cultural, social, economic, religious differences between the population of the various areas of Scotland, are all involved in the definition of the problem.

A **wide view** of these elements is then needed to assist a more efficient decision making process exploring the **hidden and unknown links** between different aspects of the system.

The use of traditional data spatial instruments presented all the **limits of multidimensional visualization**. As a matter of fact the more the number of levels is added in the map, the more the understanding is made difficult.

The other limit of the use of geographic maps in the visualization of data is generated by the nature of spaces. Areas cannot restrain some kind of data visualization without breeding **perceptive problems**. This brought to the use **Cartograms** instead of physical geographic representations.

Choroplethic map visualizing the Catholic population in the Scottish Local Authorities

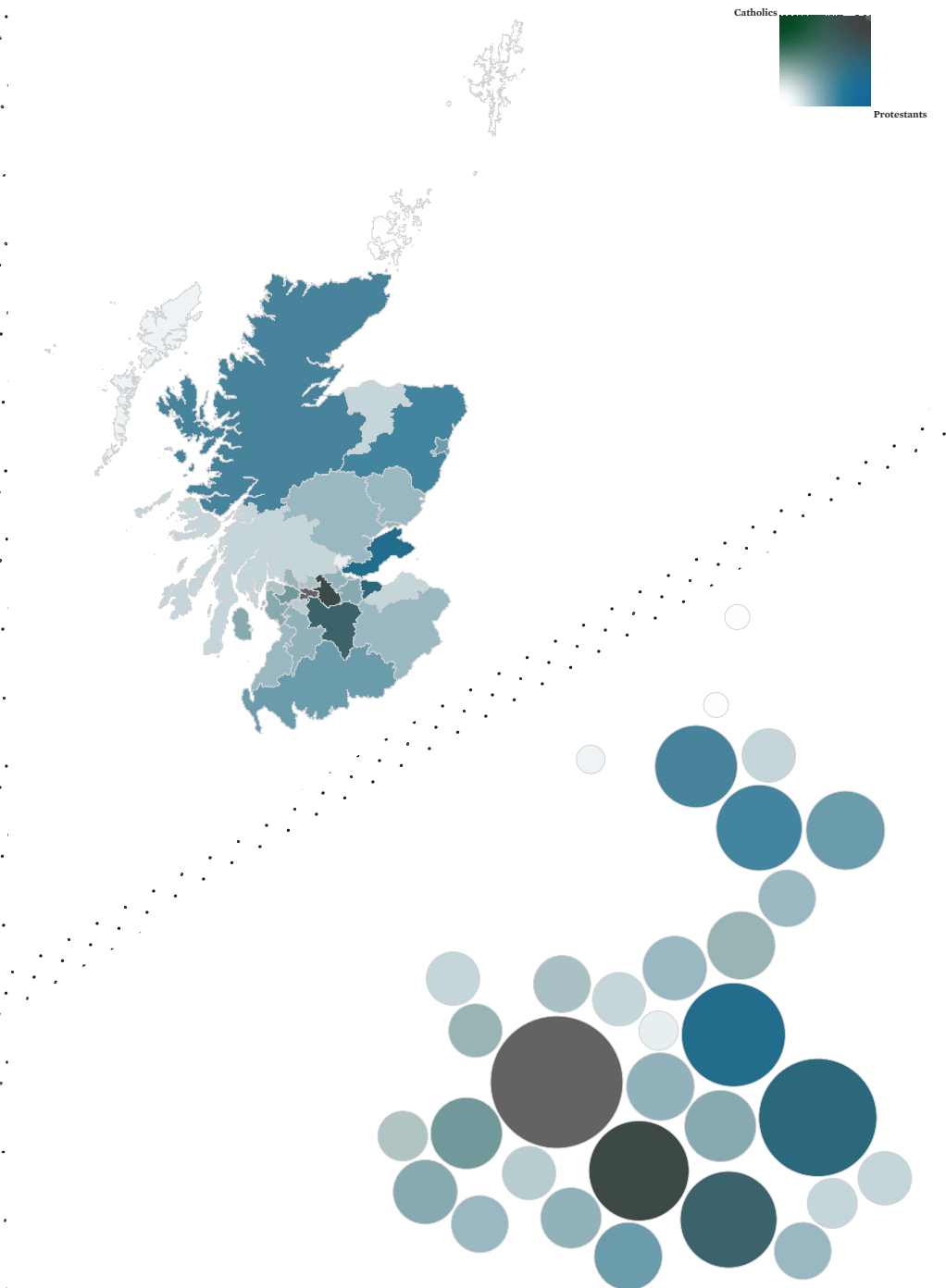


Choroplethic map visualizing the Protestant population in the Scottish Local Authorities

In **choroplethic maps** the use of chromatic fill helps in understanding the relevance of each represented element on a particular area but not solving graphic and perceptive problems.

This instrument suffers, though, from its limit of an only **single-layer** possible representation.

Choroplethic bi-variate map visualizing the Protestant and Catholic population in the Scottish Local Authorities

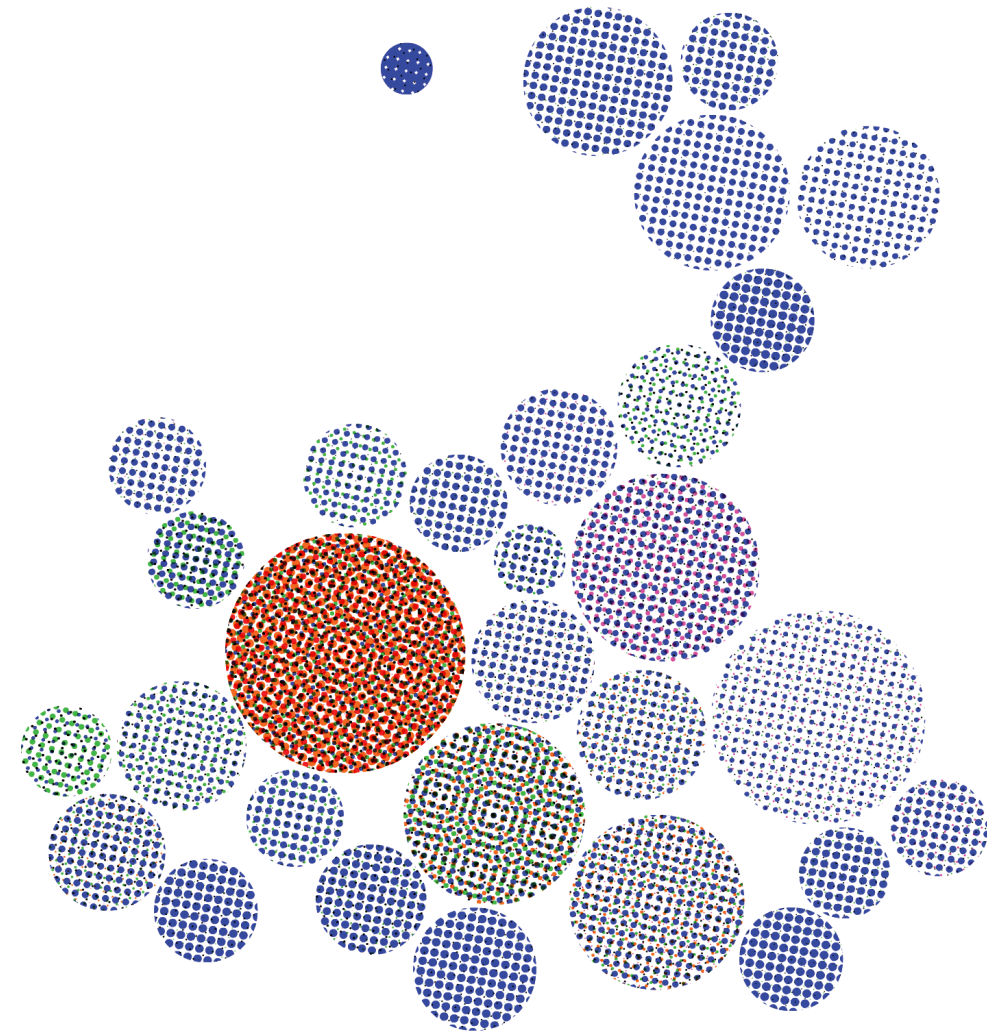


Choroplethic bi-variate Dorling cartogram visualizing the Protestant and Catholic population in the Scottish Local Authorities

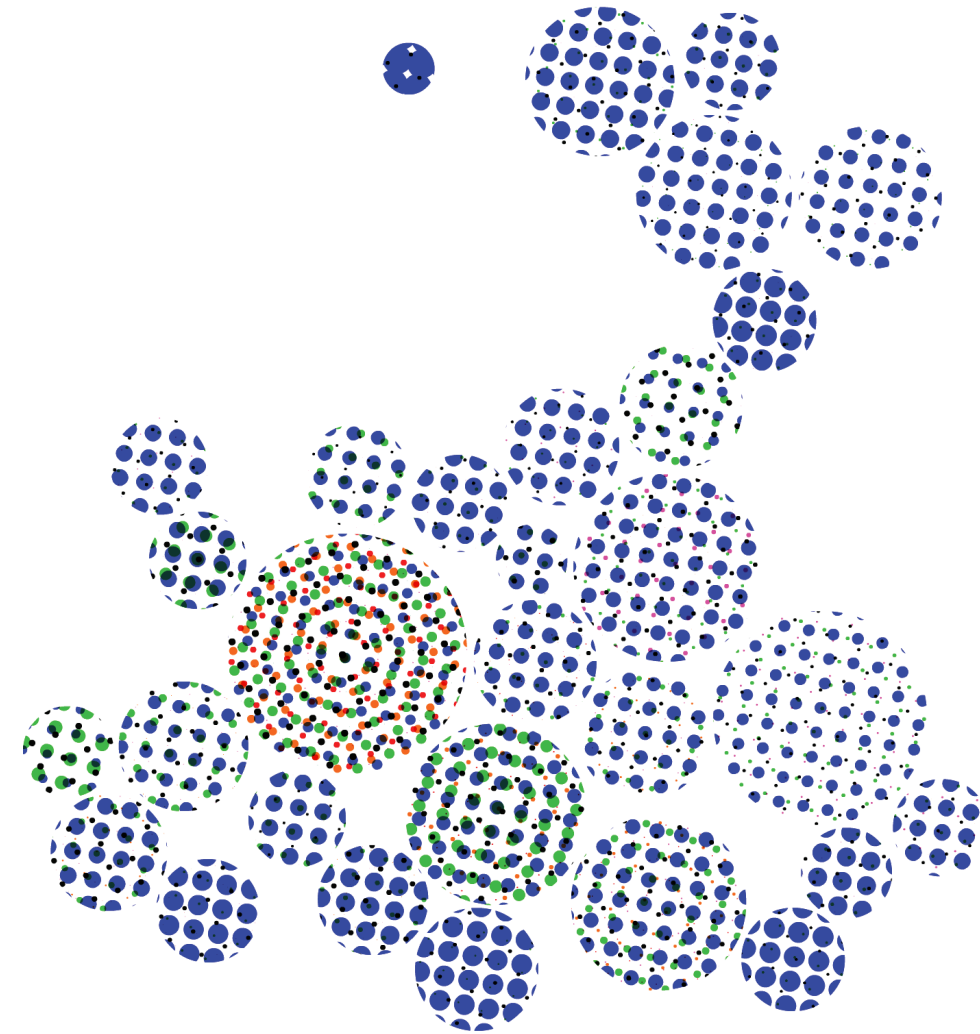
Results of choroplethic maps are enhanced in **multivariate maps** in which colors representing different layers are shading to show how they are relate to each other. Resulting col ours are, though, often ambiguous and not easily identifiable.

In the second map a **Dorling cartogram** based on population is used to reflect the relevance of each region in the system.

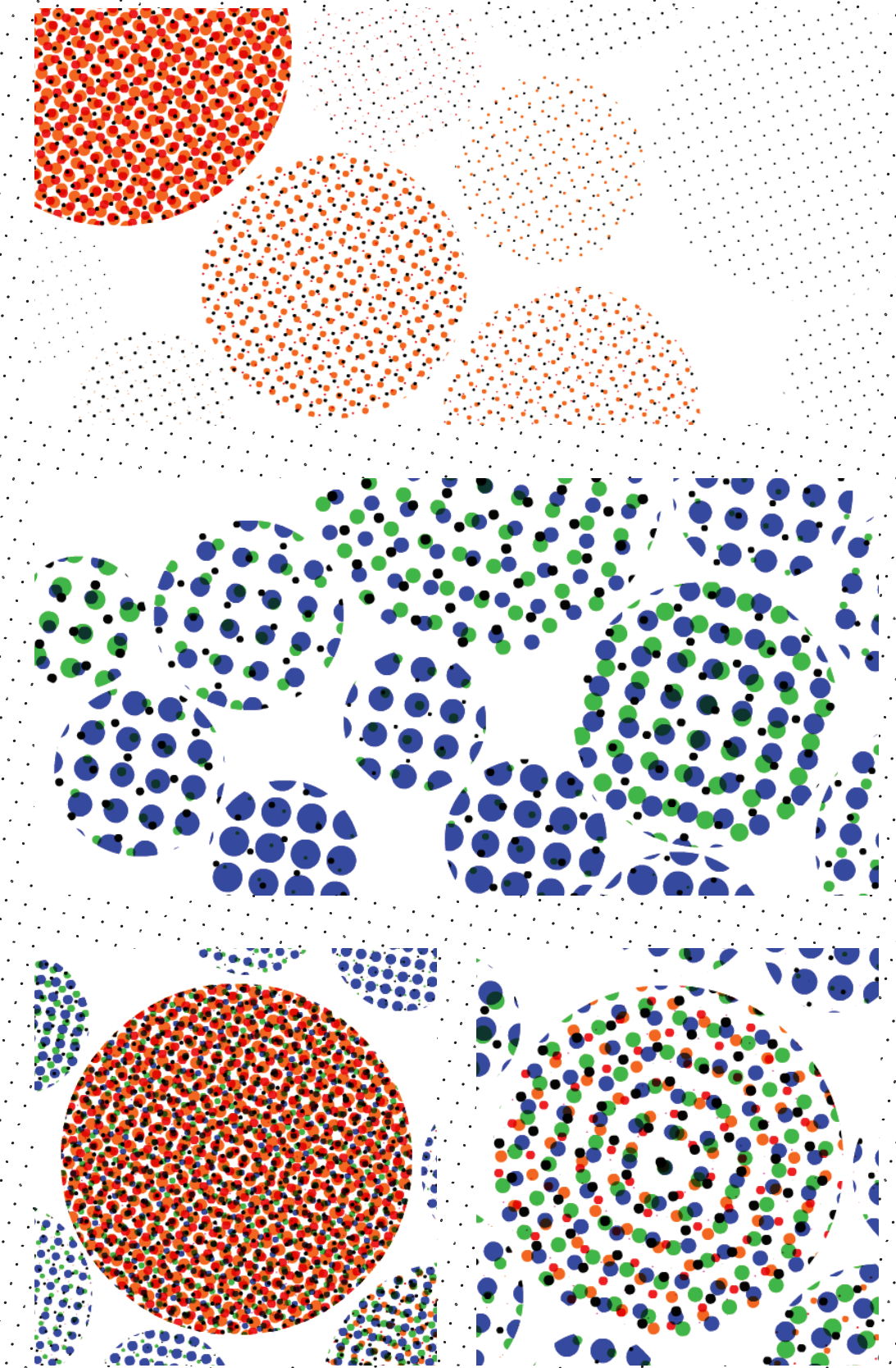




- Protestant population 10°
- Catholic population 20°
- Orange marches 30°
- Catholic/Republican marches 40°
- Other marches 50°
- Sectarian crimes 60°
- Unemployed population 70°



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The DATAOVERLAP project tries to reach various **goals**: giving a perceptively correct view of the relationship between **space and population**, offering the possibility to have a **multidimensional** view of a system in one representation, discover the limits of **chromatic fills** in data visualization on space.

The use of halftone technique in georeferenced datas visualizations let the **overlap** of layers possible avoiding graphic elements to cover each other and permitting them to interact.

The other important aspect of halftone technique is the relationship linking **empty and filled space** in the areas. Thanks to the nature of this graphic tool, it is easy to represent datas on space. The correspondence between **percentages** derived from datas and percentages of darkness of halftone fills in the areas is indeed direct and easily understandable.

Using DATAOVERLAP designer has **freedom of customizing** every single aspect of halftone technique as angle, colour, resolution, shade dot darkness being sure that coloured areas will maintain their size.

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Maps realized with CatGram software coded in collaboration with Giorgio Caviglia



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