Predictive Geodemographics

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Abstract

Geodemographic classifications are temporally static, but geodemographics are area-based classifications, and areas are *dynamic*.

1 Geodemographic classifications

Geodemographic classifications are temporally static, but geodemographics are area-based classifications, and areas are *dynamic*.

$$GeodemographicChange = \sum SociodemographicProcesses$$

- gentrification and displacement
- urban decay
- suburbanisation and counter-urbanisation

Use multitemporal open data as proxies for attributes to sociodemographic processes (gentrification and displacement) to predict geodemographic change pairs.

1.1 Comparison of Methods

- Gradient Boosting Machine
- Multitemporal feature selecred variables - 51% accurate
- Change Vector Analysis (CVA) - 48% accurate **BUT** greater speficity of dynamic geodemographic change

In: A. Kmoch, E. Uuemaa, D. Nüst (eds.): Proceedings of the 5th AGILE PhD School 2019, Tartu, Estonia, November 2019, published at https://doi.org/10.5281/zenodo.3835767.

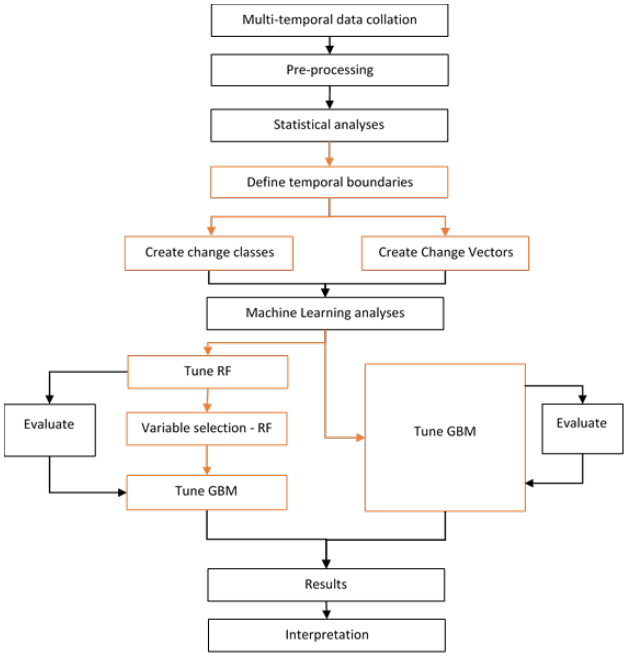

Figure 1: Method

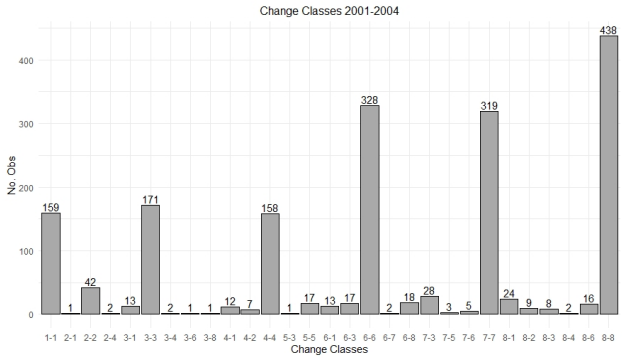

Figure 2: Change pairs

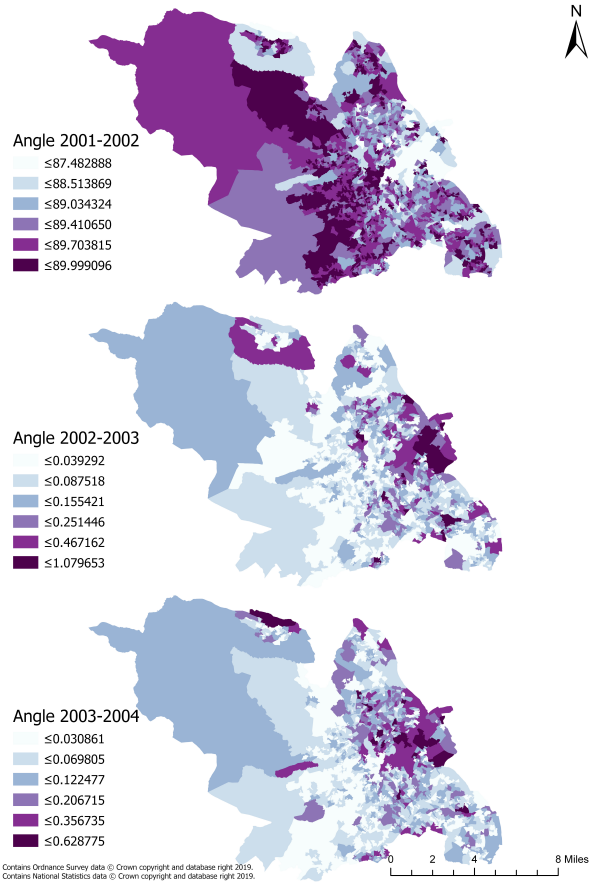

Figure 3: AngleTime

2 Visualisation

Introduced to new software - QGIS - to develop data visualisation skills, specifically for spatiotemporal data (with TimeManager plugin).

Mapping ***golden rules***

1. Black Background!
2. Fancy Font?
3. Existing colour packages, **BUT** experiment with blending modes
4. Gifs - great for the lazy reader!
5. QGIS TimeManager - perfect for quick, easy, effective GIFs, but also for the initial exploration and the visualisation of spatiotemporal data
    - Can I see any patterns?
    - Are they what I expected?
6. Although I am working with spatiotemoral data, I may not always be able to display my outputs in the most appropriate manner (GIFs?!), but static maps can still be effective when using appropriate colours and blending

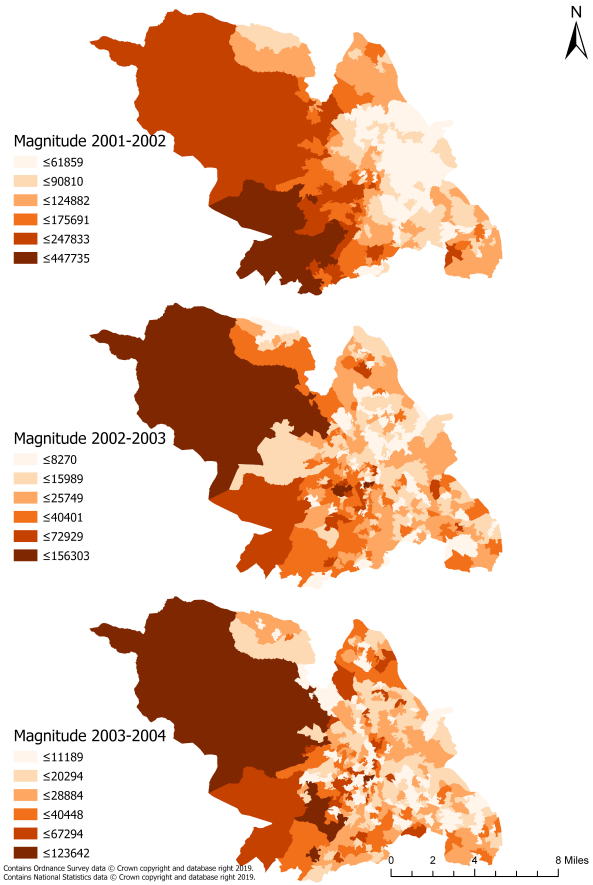

Figure 4: MagTime

3 Reproducibility

How to better improve the reproducibility of your work via version control (Git)

My current folder organisation:

1. Logical? X
2. Easy to navigate? X
3. A million seperate folders and document revisions? ✓

Version control **is** my **friend**

1. Need to rerun a specific analysis? ✓
2. Reproducible papers? ✓
3. R? cmd? ✓
4. Online collaborators? ✓
5. I have largely been using open data, and use R (with bits of ArcGIS), so these (minus Arc) lend themselves well to reproducibility. But I've learnt how to use QGIS too!

4 Science Communication

How to improve our communication (writing and presenting) through a series of small exercises to improve our writing process.

The purpose of scientific writing is to fill a gap in knowledge, and to tell and sell that knowledge with and the scientific community.

Brown's 8 Questions

Focus Focus Focus!

- Identify appropriate audience
- Defining the purpose
- Creating a story

I had the most productive writing session in that hour and half than I have in the past two months!