Ethnic and socioeconomic segregation in Belgium
A multi-scalar approach using individualised neighbourhoods

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PAA – 2016 Annual Meeting
Extended abstract
(Draft: please do not cite or quote)

Background and aims

Residential segregation is a persistent reality in Europe (Bolt, 2009; Cassiers and Kesteloot, 2012). Ethnic minorities and deprived populations are often clustered in specific neighbourhoods, a situation that not only endangers social cohesion, but also lowers individuals’ outcomes in terms of employment, educational achievement and political participation (Crane, 1991; Sampson et al., 2002; Murie and Musterd, 2004; Lichter et al., 2012; Andersson and Malmberg, 2014). In Belgium, a considerable share of the urban population lives in disadvantaged neighbourhoods (Musterd, 2005), and urban deprivation is often associated with a concentration of ethnic origin groups, as in the case of the inner city of Brussels (Kesteloot and Van der Haegen, 1997; Dujardin et al., 2008).

The vast majority of the existing studies have examined segregation patterns based on predefined areal units such as municipalities, neighbourhoods and statistical wards. Such areal units often differ in size, function and distribution across different regions and over time. This problem, known as Modifiable Areal Unit Problem (MAUP), affects any quantitative analyses of segregation (Openshaw, 1984; Wong, 2004; Reardon and O’Sullivan, 2004) and conceal processes that operate at different scales (Andersson and Musterd, 2010).

Moreover, only few studies so far have investigated the interactions between ethnic and socioeconomic segregation, especially in the European context (see for example Peach (1999)).

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The purpose of this paper is twofold. It aims at (i) analysing the interplay between socioeconomic and ethnic segregation in Belgium and in Brussels; and (ii) investigating how this interplay operates at different scales.

Data and methods

Our study is part of a broader international project – ‘Residential segregation in five European countries’ (ResSegr) –, which uses an innovative approach in order to produce more accurate measures of segregation in Belgium, Denmark, the Netherlands, Norway and Sweden. Based on geocoded data available in these five countries we construct individualised neighbourhoods by expanding a geographical buffer around grids of 100 square metres, until the buffer contains a pre-determined number of neighbours (Östh, 2014). The resulting sample of neighbours is then used to compute aggregate statistics.

In this paper we use the geocoded data from the 2011 Belgian Census in order to produce geocentric neighbourhoods at eleven different scales, ranging from 50 to 51,200 nearest neighbours, and compute five indicators of socioeconomic and ethnic characteristics:

- share of the population with foreign origin in a EU/EFTA country;
- share of the population with foreign origin in a non-EU/EFTA country;
- share of persons 25–64 years old who have completed tertiary education;
- share of persons 30–59 years old in employment;
- share of persons who received social assistance in 2011.

Our final dataset contains therefore 55 variables (i.e. each one of the five indicators at eleven different scales) corresponding to the coordinates of each of the 100m² grids of the Belgian territory.

In a first descriptive step, the data is used to assess segregation patterns using maps, and to study the bivariate correlations between ethnic and socioeconomic indicators. Next, in order to seize the complex interactions between the indicators at the different scales, we apply factor analyses on the ensemble of variables, in a similar approach proposed by Andersson and Malmberg (2014).

The analyses focus on Belgium as a whole, as well as on the Brussels Agglomeration separately. We expect the segregation patterns in the capital to be particularly interesting due to the strong presence of foreign non-European populations on the one hand, and well-off European expats on the other hand.

Preliminary findings and expected results

The preliminary tests with factor analysis reveal the interesting associations between indicators and scales. We obtain seven factors for Belgium (with eigenvalue greater than 1), which together account for 87% of the total variance. They reflect different dimensions of the residential segregation in Belgium, some at the immediate neighbourhood, others over longer distances.
As a matter of illustration, figures 1 and 2 show the first two factors. Both are directly concerned with the spatial concentration of foreigners, combined with other socioeconomic characteristics.

![Graph showing indicators' factor loadings by number of nearest neighbours](image)

(a) Indicators' factor loadings by number of nearest neighbours

![Map showing spatial distribution of factor scores](image)

(b) Spatial distribution of factor scores

**Figure 1: Belgium, factor 1 (19% variance): European migration and employment**

The first factor (19% of the total variance) expresses the spatial clustering of foreign populations from European origin, associated to some extent with unemployment. This is namely the case of the old industrial belt in the south of Belgium, which attracted an important number of foreign workers in the past – namely from Italy – before the
Figure 2: Belgium, factor 1 (18% variance): Non-European migration and social assistance
industrial decline. Brussels, the European capital, also scores high in this factor, as well as the areas located close to the Dutch border. The map of the factor scores presents an interesting contrast between most of Flanders in the north – where employment rates are higher and there is less concentration of foreigners – and the French-speaking region in the south.

The second factor (18% of the total variance) is dominated by the concentration of people of foreign origin in a non-European country. The urban areas clearly stand out in this factor - namely Brussels and its outskirts. The factor is also related, although in a lesser extent, with high proportions of unemployment and of people who benefit from social assistance. It can therefore be interpreted as the clustering of both ethnic minorities and poor socioeconomic conditions in the Belgian cities, especially at a short distance (the factor loadings peak around the 3,000 nearest neighbours).

The different factors obtained for Belgium and for Brussels will be thoroughly analysed in our paper. We expect that our approach combining individualised neighbourhoods and factor analysis will produce a good overview of the intricate interactions between ethnic and socioeconomic segregation operating at different levels. Furthermore, the mapping of factor scores will offer a detailed picture of segregation patterns in a multi-dimensional and multi-scale perspective. Not only does our approach give compelling results for Belgium – as the preliminary tests suggest – but it may just as well provide an interesting way of assessing segregation patterns in other countries for comparison.

References


