

A LIFE COURSE AND SPATIAL PERSPECTIVE ON INTERNAL MIGRATION. A CASE STUDY OF THE FRENCH SPEAKING COMMUNITY OF BELGIUM

The simultaneous concern for time and space in the analysis of migration processes has been the subject of quite some discussion, but empirical applications are still rare. Since event history analysis became commonly used in demography, most studies have stressed the time aspect, while spatial elements only receive marginal attention.

In our paper we will present an initial methodological reflexion on the simultaneous analysis of the geographical and time dimension of migration. First, we will visualize individual migrations over the life course. We will show that this method can be used as an explorative and educational tool that serves to portray a region's overall internal migration pattern and to depict also specific aspects. Secondly, we will propose combined spatial and time indicators to quantify migration and residence patterns that can subsequently be used in statistical analysis. We demonstrate our proposal through a case study of an elderly population living in the French speaking part of Belgium.

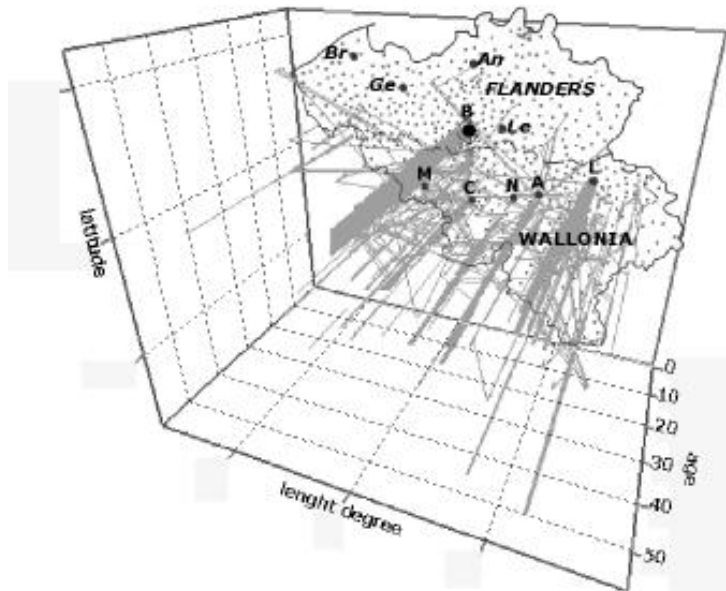
DATA AND MEASURES

We will use data from the retrospective survey "Parcours de vie des seniors. Une approche biographique étendue aux événements de santé et à l'espace de vie. Mise en perspective quali/quantitative", (Liège University, 2006). In this survey, 902 respondents of the Walloon and Brussels Capital Region of Belgium, aged 55 to 74, were consulted on their life events from birth to the time of the interview. Migrations are defined as residential changes between municipalities. Periods of residence outside of the country are treated as missing data. The geographical coordinates of the municipalities are based on the Ellipsoid International reference system according to Hayford. Time is measured by the respondents' age between birth and the age of 55.

VISUALIZATION OF LIFE TIME MIGRATION PATTERNS

In order to visualize residence-migration trajectories, we locate individual's place of residence at birth (the municipality's geographical x-y coordinates) and we repeat this practice for every year of a person's life, following the z-axis (the time axis), perpendicular on the x-y plane, up to the age of 55. The successive points are joined by lines. Those that are parallel to the z axis represent residential duration. Lines parallel to the x-y plane represent migrations (Fig.1).

Fig. 2 : Residence periods and migrations between birth and the age of 55 of 100 individuals, aged 55 to 74 living in Wallonia and Brussels at the time of the interview. Abbreviations from left to right: *Br*: Brugge, *Ge*: Gent, *An*: Antwerpen, *Le*: Leuven, *B*: Brussel, *M*: Mons, *C*: Charleroi, *N*: Namur, *A*: Andenne, *L*: Liège.



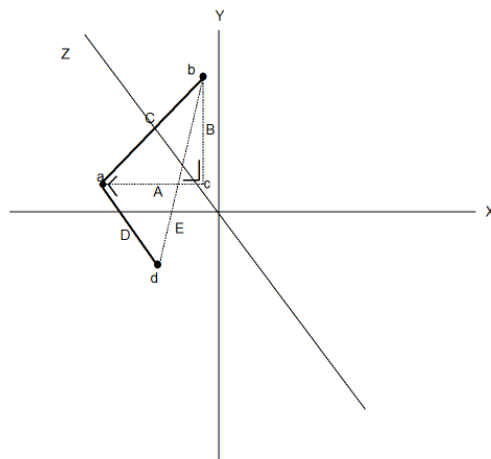
The picture as shown in Fig. 1 may look rather fuzzy and hard to interpret. However, we will show in our paper that by using the Rgl-tool to rotate the graph, shortening certain axes, and zooming in on particular time and geographical parts of the picture, patterns become very clear. For instance, we will be able to see that migration concentrates between mayor Walloon cities and lines from and to Flanders are scarce. Migration is most intense during childhood and early adulthood. At these moments of the life course, migration occurs over a long distance, mainly towards Brussels, Liège and Namur. After the age of 35, residence duration increases and migration is characterised by short distance. Finally, we observed some conjunctural elements influencing migration. Effects of the promotion of Namur as the capital of Wallonia and the foundation of the new town of Louvain-la-Neuve were clearly visible as the number of person-years spent there grew.

MIGRATION EPISODES AND THEIR INDICATORS

In order to do build time-space indicators for migration, the individual trajectories as shown in Fig. 1 are decomposed into residence episodes, each beginning with the occupation of a residence and ending with the next move. Fig. 2 presents such a residence episode. The X and Y axes are the geographical coordinates, while Z

indicates time. Points a and b are two successive places of residence, while point d indicates the starting age at residence a . As emerges from the figure, every residence episode can be characterized by two right triangles. The first abc forms the geographical coordinate system of a and b ; the second triangle, abd , relates the geographical coordinates to the time coordinate z . Note that the angle of a is a right angle, with D on the third dimension Z .

Fig. 6 - Representation of the 3 dimensions of a residence episode



These triangles provide a number of indicators for the residence episode. Age - at the beginning and at the end of an episode for example -, places it with respect to time. The dynamic elements of the episode are represented by the *sides* of the two triangles, and by their relationships. Migration distance and its direction are measured by the Hypotenuse C of triangle abc and the ratio of B to C respectively. The time dynamics concern residence duration and the pace of successive migrations. The first is given by side D of triangle abc , the second is defined as the ratio of D to C .

A thorough analysis of our indicators is beyond the scope of our contribution, but we show what they look like in a descriptive analysis. We will also measure some relationships between indicators demonstrating for example the relationship between age and migration direction, or between residence duration and migration distance of the consecutive move. This preliminary exploration of our indicators complement the visual inspection of the migration patterns and will allow us to know where people live, for how long and when; in what direction they move, over what distance, where to (from) and when.

FURTHER POSSIBILITIES

We will discuss two plans for further development of our approach. First, we will exploit our data using explanatory life course analysis. We will integrate our residence episode indicators in databases involving socio-economic and demographic characteristics of respondents *and* municipalities.

Secondly, besides residency, the survey includes information about successive workplaces, locations of the schools people went to and residency of family members. These can be taken into account as explanatory variables, but also as geographical points over the life course complementary to the place of residence. We will discuss the possibilities to open up our method to take into account more than one geographical point at the time.