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TRANSITIONS: OPPORTUNITIES AND THREATS

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PROJECTIONS OF SOCIAL NEEDS: CONTRIBUTION OF MICROSIMULATION MODELLING TO LOCAL POLICIES ISSUES

Abstract

At local level, policy makers are expected to anticipate the social needs of their population and a willingness to adapt policies to local population profiles is considered a dynamic approach to policy-making. Local decision-makers want to have more and more prospective elements in order to anticipate social needs and to be able to integrate various factors into a consistent policy intervention approach.

Population projections are already a tool used to foreseen the structure of a population and to monitor or envisage public policies but they have some limitations: the aim of this research is to project the population by type of recipiants and social profiles of the population in order to determine social needs at short and medium-term, at various geographical scales and sociodemographic contexts.

The method used is *microsimulation* modelling in part because it provides a lot of flexibility in the design of the projection and allows for a lot of variables to be included by keeping all the characteristics which are associated to the people and the household.
The proposed model is a closed and discrete demographic model, applied to the whole population of a local territory and will mainly rely on both census data and administrative data but when available, surveys run at local level will be used.

The results of the model will serve locals authorities with the aim of identifying, for example, needs of dependent elderly living in their own home which would need meals on wheels, health and social care services, etc., the evolution of single-parent families and of the women's professional activity to adapt the offer in childcare services (specific offer, hours adapted, etc.).

Research proposal

1 – Context of this research

At local level, policy makers are expected to anticipate the social needs of their population and a willingness to adapt policies is considered a dynamic approach to policy-making.

In France, numerous policies are determined at local level. In order to make appropriate decisions, political actors need information, especially concerning current and future needs.

These issues are of concern for local authorities. In France, the 'department' is primarily responsible for social action programs and for implementing age-friendly policies while housing is under the responsibility of municipalities (towns).

Population projections are already a tool used to foreseen the structure of a population and to monitor or envisage public policies but they have some limitations and the research proposed here is to project by type of recipiants using projections of social profiles of the population. Each segment of the population have different needs (elderly, children at childcare ages..) and to some local characteristics also play a major role.

To describe the characteristics of a population ("social portrait" of territories), at a given time, using numerous indicators as they are often made is not a sufficient approach.

Local decision-makers want to have more and more prospective elements in order to anticipate the social needs of their citizens and to be able to integrate these various factors into a consistent policy intervention approach.

In this analysis and more broadly for our research, we focus on a definition of social needs as related to the evolution of indicators linked to the social, economic and demographic situation of the future territory: in most of social demographic diagnosis conducted to estimate the future social and economic situation of territories, the analysis is based on the study of family structure, the socio professional category, the school drop-out, etc. Indeed, some indicators are particularly relevant to judge of the "social vulnerability" of a territory (in terms of numbers, representativeness and evolution) and that's what we project.

A central element in demographic changes at local level is to consider factors associated with "territorial dynamics" i.e. housing market, residential appeal on the social profile of a territory and migration dynamics.

At local level, housing is also an important factor as it evolves not only by number of households and their size and characteristics (such as the type of household and their income).

Differences in the population profile which are observed in some territories can be the consequence of the type of housing (size, quality, value, etc.), or of the type of territory. Diffences can also be due to the "physical" characteristics of housing or more economical ones (owned or rented dwelling, social housing, etc.)

Migrations are both a cause and a consequence of territorial planning policies: for example, at regional scale, construction of a road or an economic area, may have important impact in terms of migration contribution; as well as the construction of new infrastructures[1].

The smaller the territory is, the more the population will be affected by migrations[2].

These demogaphic specificities linked with the scale of the territories under consideration must be taken into account in the projection model.

The aim of this research is simulate the changesin some social needs of a population at short and medium-term, (e.g., the simulation of needs associated with ageing and disability rely on the number of older people that will be dependent and theirneed for home-care services – meals on wheels, nurses..., and nursing homes according to their level of disability).

We seek to create a tool of projection, flexible enough to be used in various geographical scales and sociodemographic contexts: simulate and forecast potential changes for different levels of local authorities and different type of territory (urban, semi-urban and rural), in order to test assumptions for policies changes and their impacts according to the territory.

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[1] POULAIN M. & EGGERICKX T., « Une logique démographique - pour le suivi du développement durable de la société », Populations locales (Actes du colloque de Strasbourg 1999), 2007, pp. 327-338.
[2] BERGOUIGNAN C., « Projeter les populations soumises à une forte mobilité résidentielle », in Cahiers de démographie locale, Dynamiques des populations locales, 2008, pp. 19-98.

According to policy issues with the future of socio demographic profile of territories, we can identify three components that will benefit of a prospective analysis: elderly population and old-age dependency, housing, and, more broadly, socio demographic diagnosis of population.

For these three specific themes, the prospective analysis seeks to answer specific questions:

1- Elderly and old-age dependency

- What are the profiles by age and level of dependency of the population (incidence of the disability)?

- Considering these parameters, how many dependent elderly will live at home (with or without a need for aged-care services) and how many elderly will live in nursing homes?

- Which will be the housing conditions of the elderly?

- What is the best option to make the supply of services of the territory meet the demand?

- Which will be the changes in living conditions and socio economic profiles of the elderly (family environment, financial resources, housing conditions, etc.)?

- Etc.

2- Housing

- What will be the profile of the population according to the housing available on the territory? What type of housing should be built on the territory, to preserve a balance in the housing stock? To promote social diversity of the population?

3- Socio demographic diagnosis of the population

- Broadly, which will be the evolutions of the social profile of the population: family structure, financial resources, labor force participation, education attainment, etc.?

2 - Method used and data

Method

Microsimulations are the projecting method retained as it provides a lot of flexibility in the design of the projection. We will have to balance the need of detailed simulation with the availability of data at local level; the need of this model to be flexible enough to be used at different level of local authorities without having to be rebuild.

These models of microsimulations are besides essential when it's necessary to include a large number of variables in the model by keeping all the characteristics which are associated to the

people and the household. They are particularly suitable to keep, for example, interpersonal links (in families, households, etc.). Furthermore, the possibilities of aggregations of outputs are almost unlimited[3].

The proposed model is a closed[4] and discrete[5] demographic model, applied to the whole population of a local territory.

Simulated events

The events modeled are the following:

    1- <u>Population growth</u>

- Births

- Deaths and widowhood

- Emigration

- Immigration (from overseas; from France; from other local authorities nearby)

The volume and the socio demographic characteristics of emigrants and immigrants are directly related to the impact of the modification of the housing stock. Various scenarios can so be proposed about the impact of the evolution of the housing stock (construction, destruction, rehabilitation) on the socio demographic profile of the population.

    2- <u>Household formation and dissolution</u>

- First marriage/remarriage or *de facto* union

- Divorce or union dissolution

- Leaving home (for example: young people leaving parent's home or an elderly person leaving its home to live in nursing homes).

    3- <u>Others events simulated</u>

- Old-age disability

- Education attainment

- Situation on the labour market (professional activity or inactivity; socio professional category)

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[3] VAN IMHOFF E. & POST W., « Microsimulation methods for population projection », in Population, 1998, 10ème année, n°1, pp. 97-136.
[4] This type of models considers that units are interconnected when it's necessary (mostly family relationships). New entrants are considered like new members of the population (contrary to continuous models) and are projected like others people for the whole period.
[5] In this type of model, periods are processed one after the other and we consider that every event occurs just once for the period.

- Income level.

The presentation will focus mainly on the design of the model and the specificities of models for local authorities' policy makers.

This model will mainly rely on both census data and administrative data but when available (planning program of housing, social assistance recipients files, etc.), surveys run at local level will be used.

With regard to demographic data, differential levels of mortality and fertility are considered but, of course, migration is the most important of the demographic event as migration shapes the future of areas. We need to simulate different scenarios according to the number and typology of housing offered as migrations are directly related to housing supply.
Microsimulations models seem, from a methodological point of view, adapted to this approach that deals with complex issues and nonlinear factor in particular policy ones.

3 – Results

Microsimulations will allow to aggregate and to combine results in order to be able to identify situations of social fragility and insecurity for people:
- Dependent elderly living alone with limited financial resources, etc.
- Large single-parent families, without employment or with a precarious job, with low incomes, etc.
- Etc.

These results will serve locals authorities in order to identify for example:
- Dependent elderly living in their own home which would need meals on wheels, nurse help, health and social care services, surveillance systems, automation and electronic equipment, etc.
- The number of places in dependent old people's home for dependent elderly who cannot live by themselves in their own home
- The evolution of the number of single-parent families and of the women's professional activity is essential for policy makers particularly to adapt the offer in childcare services (specific offer, hours adapted, etc.), type of housing.