

POPULATION AND DEVELOPMENT SUSTAINABILITY IN PORTUGAL: A TIPOLOGY

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INTRODUCTION – CONCEPTS
CONCEPTUAL-METHODOLOGICAL FRAMEWORK
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INTRODUCTION

The Concept of Sustainability

It is a state difficult to reach
An objective difficult to attain

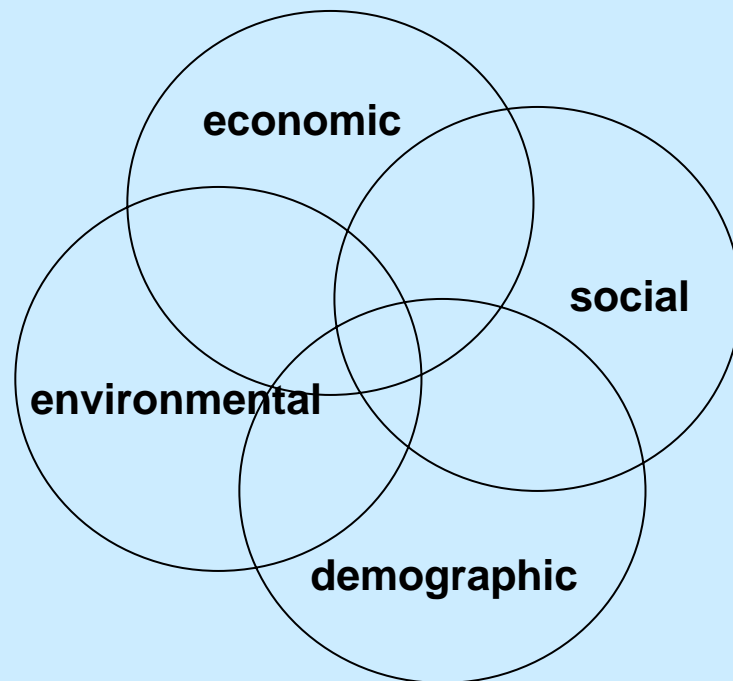
The most accepted definition

*Balanced system of environmental, economic, social and cultural
interacting sub-systems*

It omits the demographic subsystem - Population

The structural frame of the society and the economy

THE SUSTAINABILITY SYSTEM



It is important to understand the interconnections within the system, the action of each component upon the others and their mutual effects

First step: to understand **each** of the sustainability subsystems

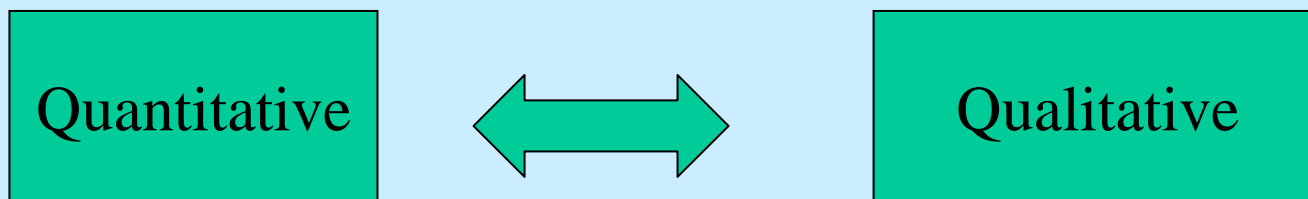
The concept of demographic sustainability

- No consensus
- Too simplistic:
 - ✓ Optimum growth rate of the population corresponding at least to a 2.1 fertility rate
 - ✓ Optimum relationship between old and working age population
 - ✓ Optimum sex balance

CONCEPTUAL-METHODOLOGICAL FRAMEWORK

A concept proposal

Two dimensions of the demographic sustainability subsystem



Little research has been developed on the linkages between these dimensions

Demographic sustainability in quantitative terms

A territory is quantitatively sustainable when an optimal relation among sexes and age groups is achieved relative to their size and growth.

Demographic sustainability in qualitative terms

Human capital of a territory - the knowledge, skills, competencies and attributes embodied in the population.

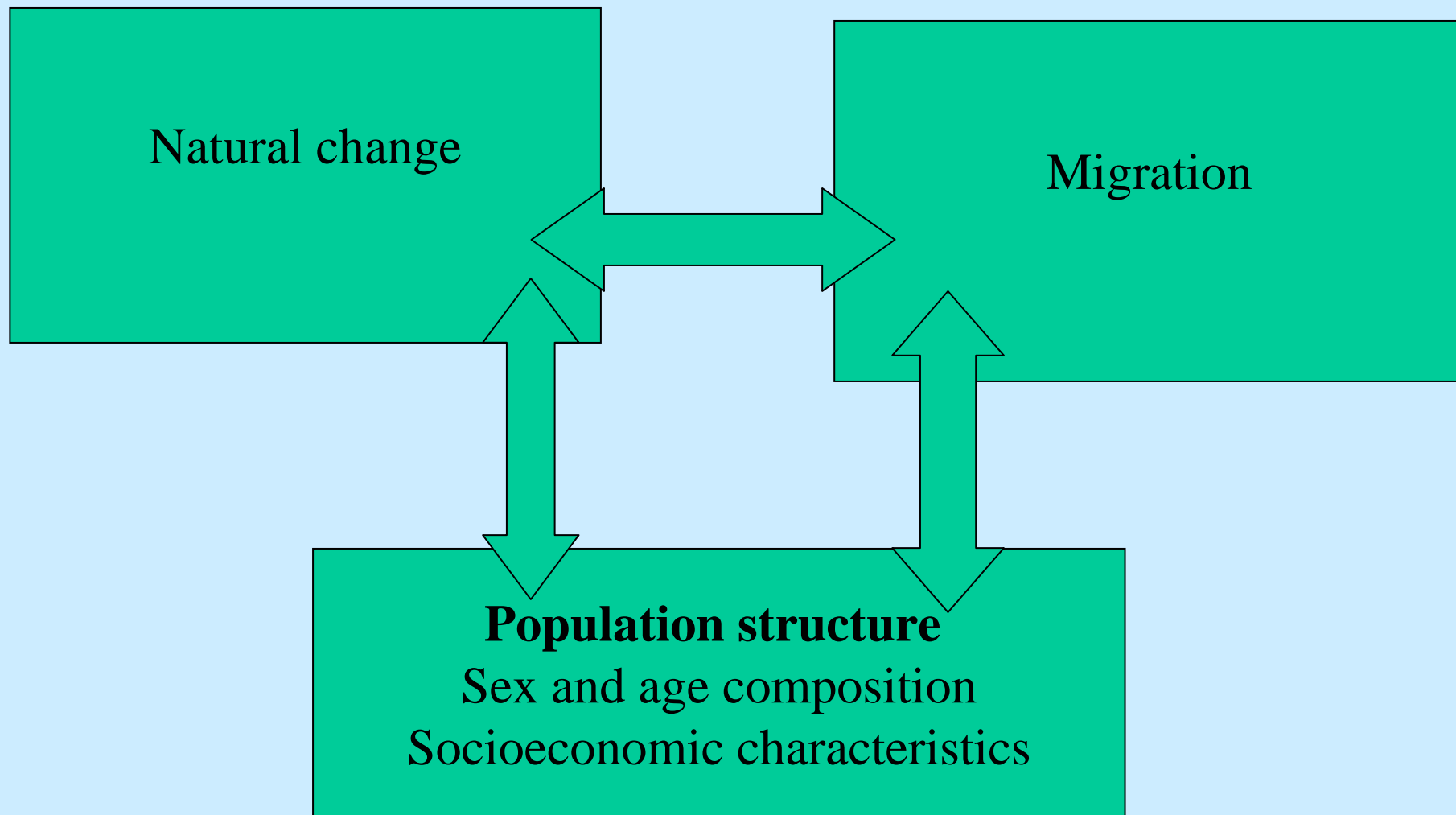
The level of human capital formation and use is reflected on the socioeconomic characteristics of the population.

A territory is demographically sustainable in qualitative terms when an optimum level of labour force participation, education and skills of the population is reached.

In the short and medium run, but **not in the long run**, one component of demographic sustainability can **counterbalance** another in order to maintain or achieve the state of equilibrium of this subsystem.

The demographic sustainability subsystem

Components



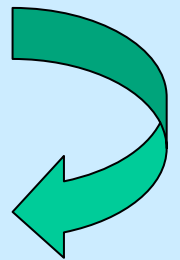
Main research goal

*To build a typology of demographic sustainability in Portugal,
taking into account
the linkages between its quantitative and qualitative dimensions.*

Territorial unit of analysis: *concelho*, the basic administrative unit

Period of analysis: 1991 – 2001

Limitation: relatively short period in terms of sustainability



An offsetting effect

Variables

Quantitative dimension

- natural increase
- migration
- sex
- age
- place of birth
- citizenship

Qualitative dimension

- educational attainment
- economic activity
- socioeconomic status
- occupation
- working hours
- place of work in relation to place of residence of the population

STATISTICAL METHODS OF ANALYSIS

Factor analysis

- The factors enable to identify structural relations among variables/indicators that could not be achieved with the original set of variables
- Extraction method: **Component analysis**
- Orthogonal rotation – **Varimax** method

Hierarchical Cluster analysis

Agglomeration method – **Ward** (minimizes intra-clusters and maximizes inter-clusters variance)

Observations – the **factor scores** for the concelhos

FACTOR ANALYSIS

Initial number of indicators – 56

Entered the analysis - 36

Factor 1

Endogenous component of demographic sustainability

Factor 2

Education and Skills

Factor 3

Exogenous component of demographic sustainability

Factor 1

Endogenous component of demographic sustainability

- 41% of the total variance

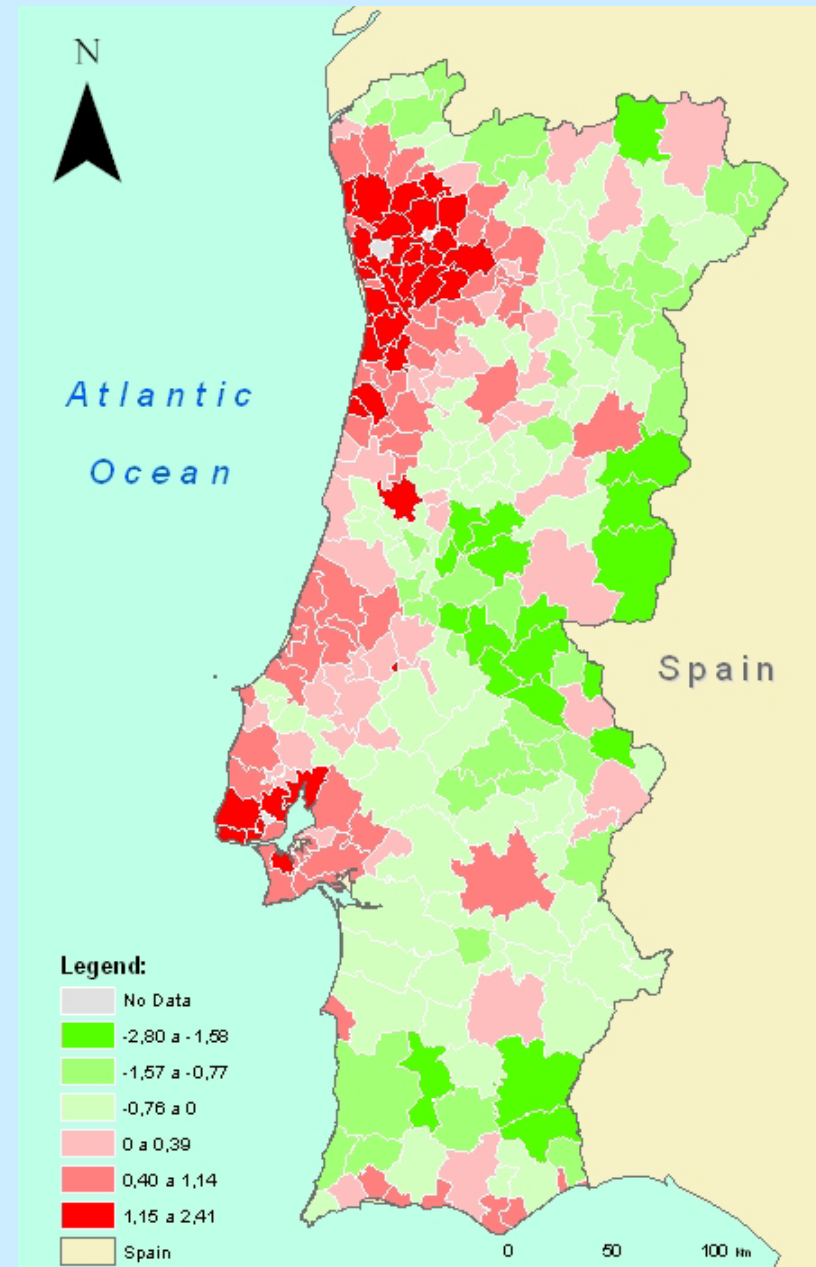
Importance of the endogenous component (natural change) for demographic sustainability that can only be attained in the long run.

- ✓ Positive values – rate of natural change; proportions, ratios and rate of change of the total population, under 15 and in the working age; participation rates
- ✓ Negative values – indicators on population aging, illiteracy rate, proportion of persons dependent on social aid
- The growth and structural elements are in a mutual cause-effect relationship

Factor 1 – scores

Endogenous component

The higher the positive score that a concelho obtains the stronger is the endogenous component of demographic sustainability in quantitative terms and vice-versa.



Factor 2

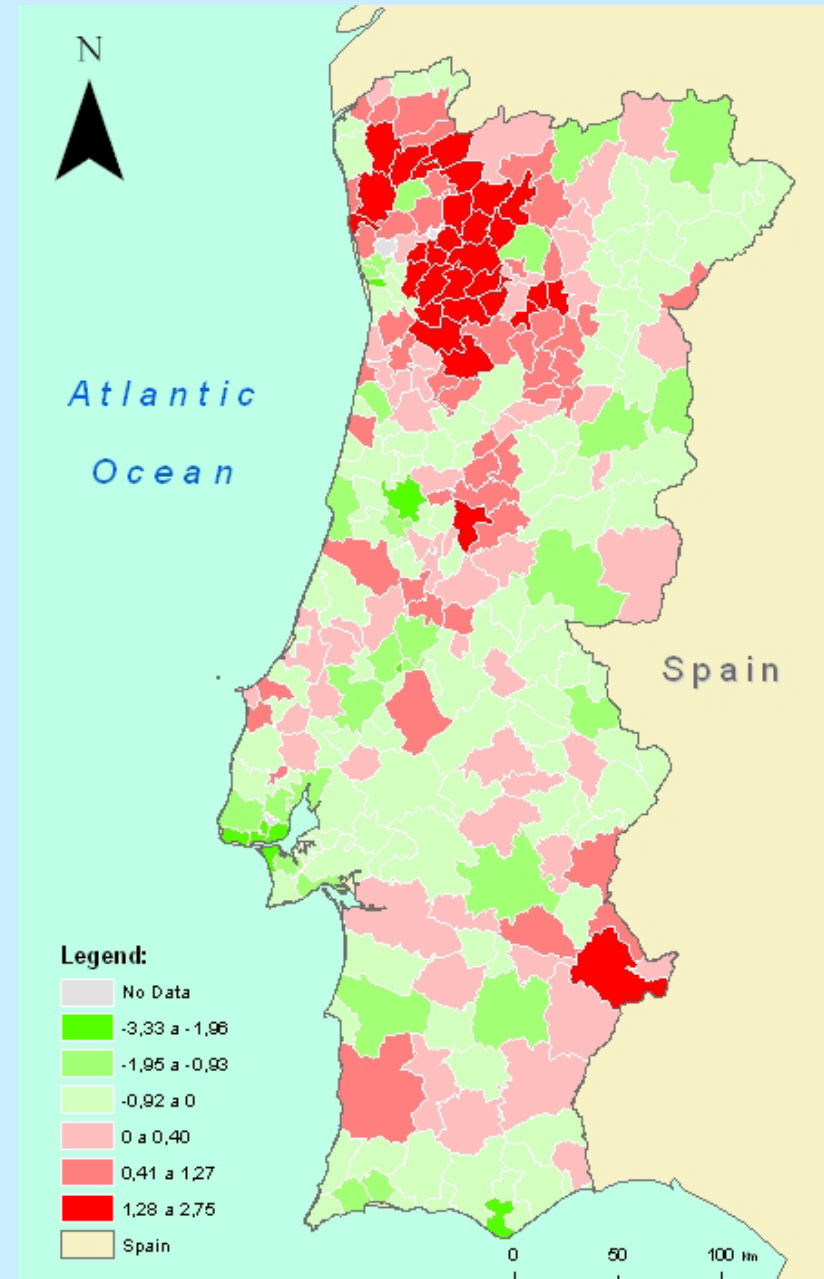
Level of education and skills

- 24% of the total variance
- Negative values - the proportion of students enrolled in secondary or tertiary education; proportion of population that already completed such levels; proportion of professionals, scientists and technicians.
- Positive values – proportion of students that have left lower or upper secondary schools.
- No indicator on population **dynamics**, including migration and rates of change in educational attainment and skills

Factor 2 - scores

Levels of education and skills

The higher the negative score that a concelho obtains the higher is the level of demographic sustainability in qualitative terms and vice-versa.



Factor 3

Changes in the educational and skills levels of the population

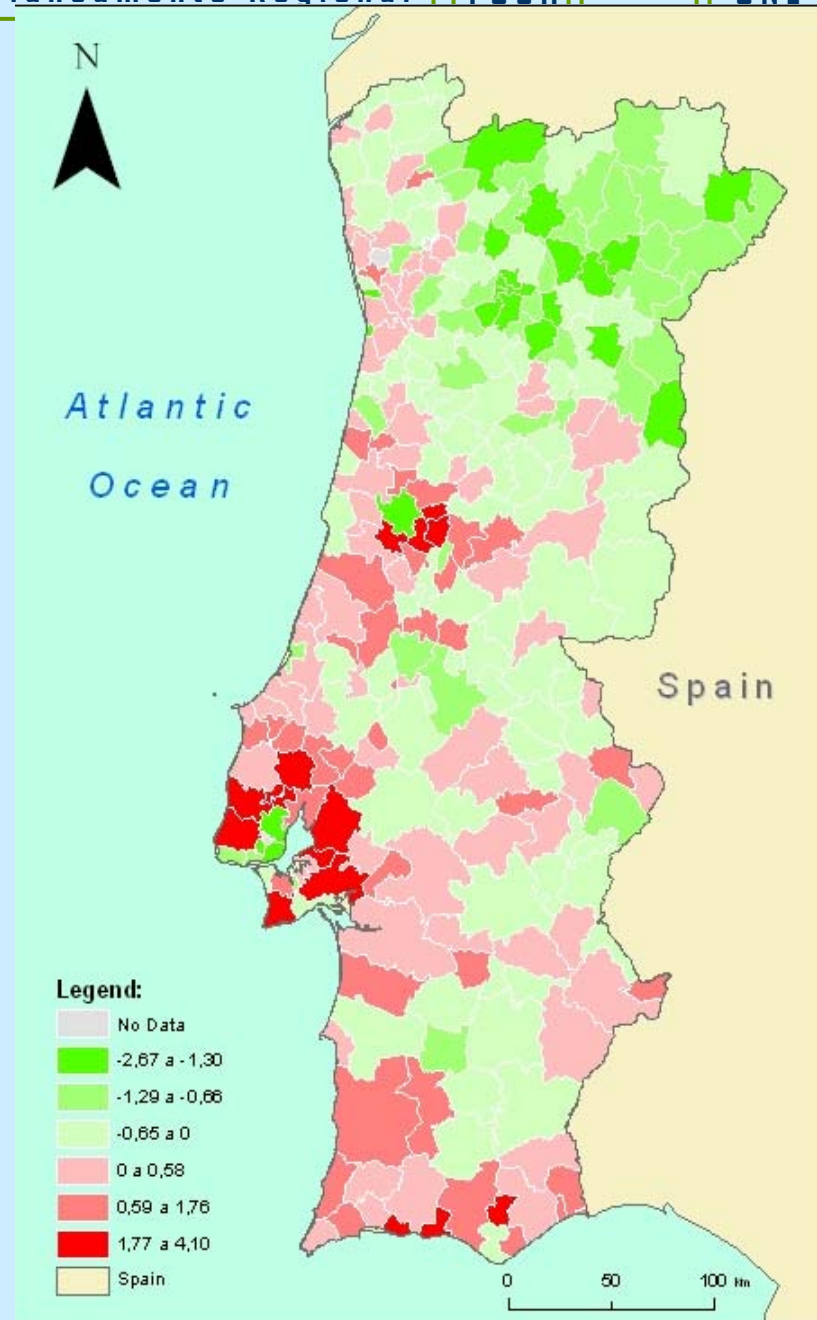
11% of total variance

- Migration indicators
- Education and skill indicators - rates of change of the number of professionals, scientists and technicians, of the number of persons with completed tertiary and upper secondary education.

Factor 3 – scores

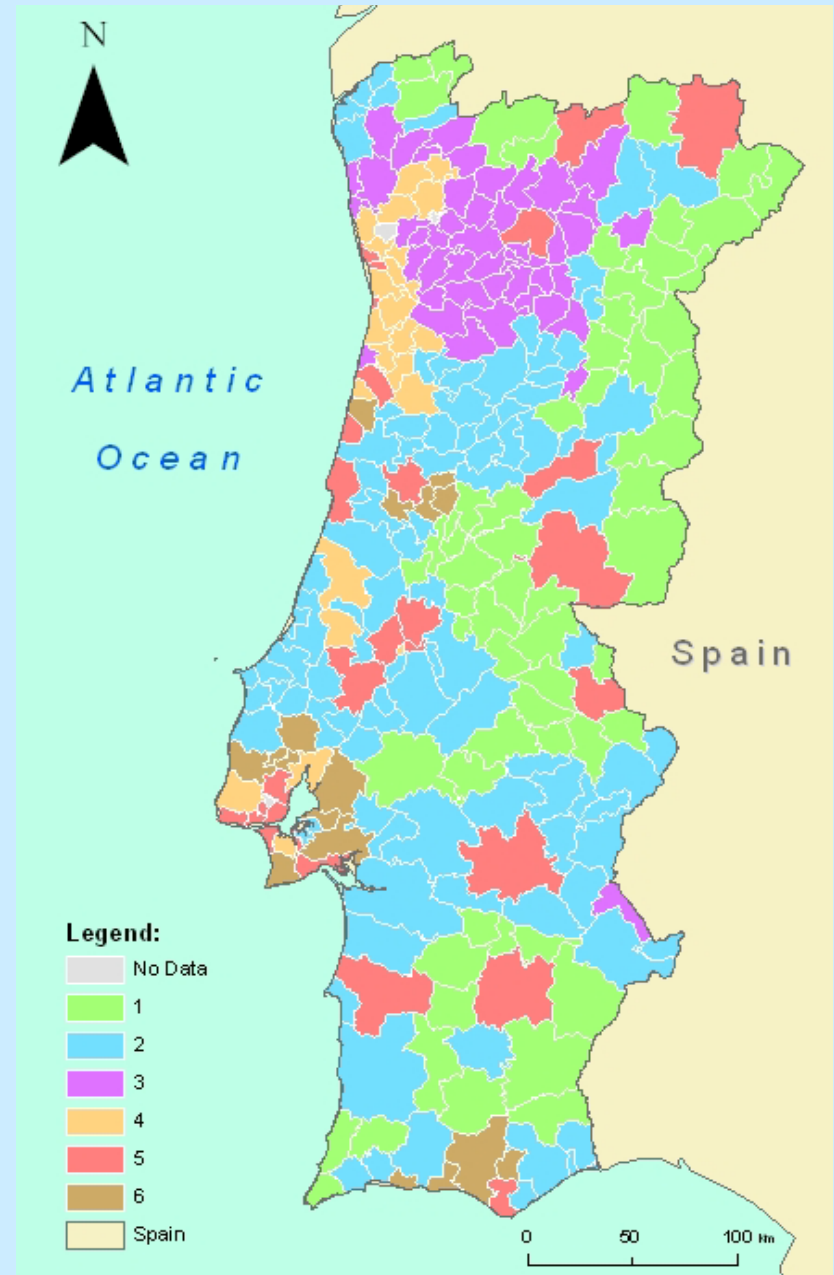
Changes in the educational and skills levels of the population

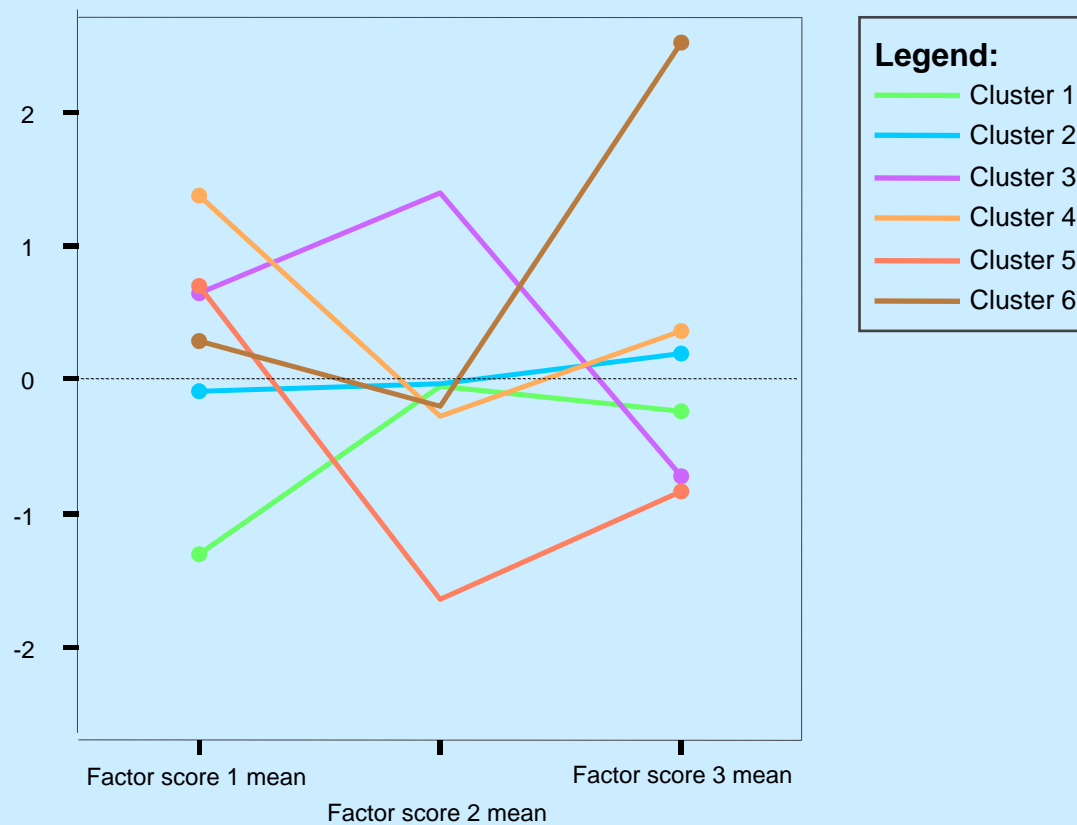
The higher the score that a concelho obtains the stronger is the change in the educational and occupational levels of the population and vice-versa.



THE CLUSTER ANALYSIS

Six clusters were obtained – each represents the combination of the three factors representing the **level and dynamics of the quantitative and qualitative dimensions** of demographic sustainability





Cluster 1

61 concelhos (22%)

•The endogenous component of demographic sustainability is weak

- ✓ Depopulation
- ✓ Population aging
- ✓ High illiteracy rate

No demographic sustainability



Cluster 2

98 concelhos (36%)

- The **endogenous** component that allows demographic sustainability in the **long run** is relatively weak
 - ✓ Low or negative natural increase
 - ✓ Population aging
- The migration component **counterbalances** these negative trends, but only in the **short and medium run**.
- The level of education and skills is quite low.

Demographic sustainability is at risk in the long run



Cluster 3

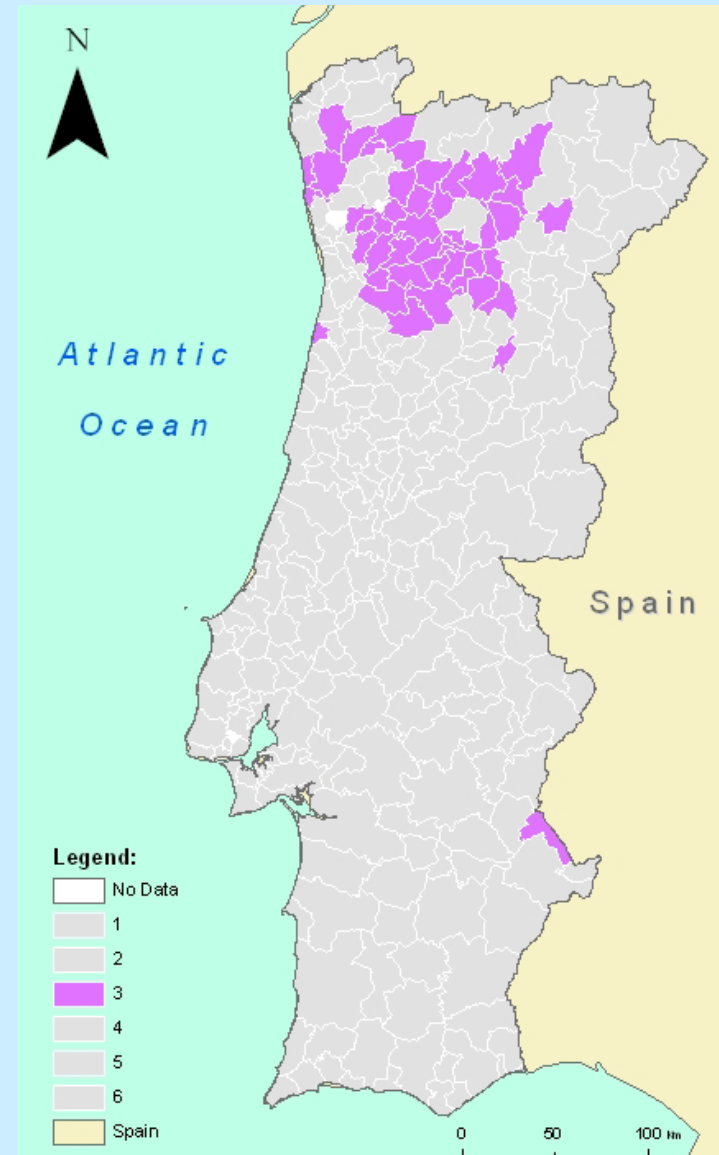
46 concelhos (17%)

- Quite strong endogenous component of demographic sustainability **in the long run**

versus

- The lowest levels of education and skills (high rates of school dropouts)
- Quite low rates of increase of the population with high levels of education and skills

No demographic sustainability in qualitative terms



Cluster 4

24 concelhos (9%)

- The strongest endogenous component
- Relatively moderate rates of increase of the population with high levels of education and skills

versus

- Educational and skill levels relatively low

Quantitative dimension ensured but qualitative dimension at risk



Cluster 5

29 concelhos (10%)

- The highest level of education and skills
- Relatively strong endogenous component

versus

- The lowest rates of change of the population with high levels of education and skills

Qualitative dimension of demographic sustainability at risk in the short and medium run



Cluster 6

17 concelhos (6%)

- Strong positive net migration/the highest rates of increase of the population with high levels of education and skills
- Moderate endogenous component
- Relatively low level of education and skills of the population

Positive net migration and positive change in education and skills ensure demographic sustainability in the short and medium run



CONCLUSIONS

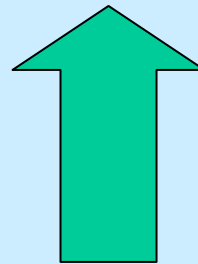
In the 90s

- No demographic sustainability both in quantitative and qualitative terms in most of the interior.
- In other parts of the interior, but also of the coast, the migration component counterbalanced the weak endogenous component – but, in the long run, these areas are **at risk**.
- Peculiarity of the north-western region:
 - Demographic sustainability in **quantitative** terms
 - No demographic sustainability in **qualitative** terms

Concentration of population with **high levels** of education and skills in Lisbon and Oporto and the inner belts of their Metropolitan Areas and in most of the medium-sized cities, both in the interior and on the coast,

versus

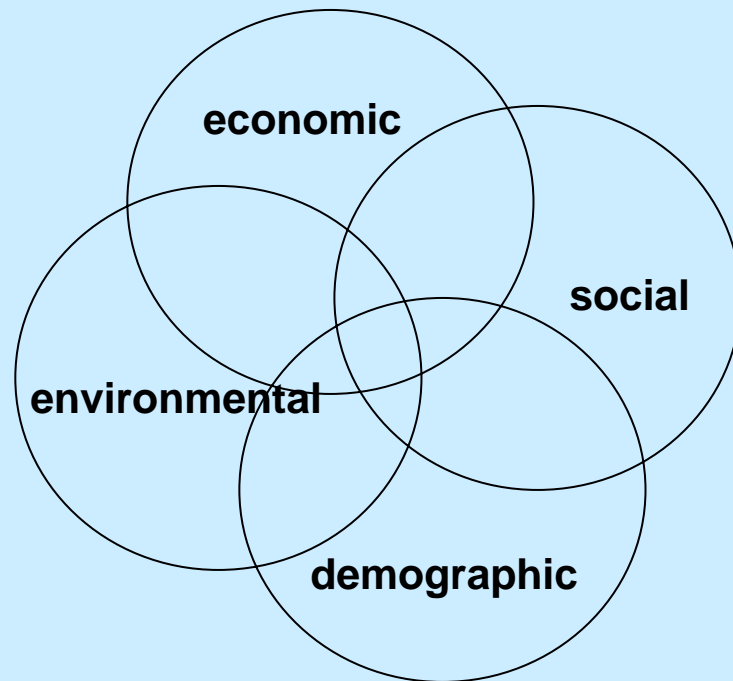
concentration of **high rates** of increase of the number of more educated and skilled population in the areas of **urban diffusion** around Lisbon and Oporto, Aveiro, Coimbra and Faro.



Spread of their daily commuting areas

- Considerable territorial disparities in the levels of demographic sustainability:
 - ✓ urban and peri-urban areas - concentration of population growth, younger population and more educated and skilled population;
 - ✓ rural areas – depopulation, population aging and low level of education and occupational skills
- Reduction of the dichotomy between the coast and the interior

Population = biological framework of the society and economy of a territory



DEVELOPMENT SUSTAINABILITY

*Population variables
need to be integrated in
sustainable development
policy and planning*