Spatial Inequality in Mortality in France over the Past Two Centuries

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Spatial Inequality in Mortality in France over the Past Two Centuries

1 Motivation

2 Data

3 Evolution of Spatial Inequality in Mortality in France
   - Evolution of Global Inequality
   - Major Changes in the Geography of Longevity in France
Why it is Useful to Study Spatial Inequalities in Mortality in France?

A large number of studies documenting a recent rise in spatial inequalities in mortality

- Kibele (2012) in Germany
- Brown and Rees (2006) for Yorkshire, Ezzati et al. (2008) for US counties, Joseph et al. (2009), for Canada...
- Daguet (2006), Barbieri (2013) and Breton et al. (2017) for France.

A limited number of studies according to the long-term trend of spatial inequalities

- Bonneuil (1997), Vallin et Meslé (2005), but with a little emphasis on spatial inequalities

Objective(s)

- Build a new database according to French departmental mortality in the long-term
- Use this database to document the evolution of spatial inequalities in the long-term (since 1806)
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Data

A new French Subnational Database

French subnational mortality databases available in 2018
A Long Road Toward the New Database

Raw data gathered

- Population by sex, departement and year of birth at census years since 1901
- Births by sex and departement since 1853
- Civil deaths by sex, departement and quinquennial age groups since 1901
- Military deaths by departement, year of birth and year of death in 1914-1918 and 1939-1945
- Deportees by sex, departement, year of birth and year of death in 1939-1946

Methodological protocol used

- Human Mortality Database protocol
### Spatial Inequality in Mortality in France over the Past Two Centuries

#### Data

**Raw Data Gathered: an Example for Civil Deaths**

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Evolution of Spatial Inequality in Mortality in France

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**Objective:** Stable spatial framework, 90 departments valid in 1967.
Spatial Inequality and Increase in Life Expectancy

Increasing $e_0$

- Increasing $e_0$ (Convergence)
  - Upward Convergence
  - Matthew Effect

- Decreasing $e_0$ (Divergence)
  - Downward Convergence
  - Decline Divergence

Decreasing $e_0$

- Increasing $e_0$ (Convergence)
  - Upward Convergence
  - Matthew Effect

- Decreasing $e_0$ (Divergence)
  - Downward Convergence
  - Decline Divergence
The Three Phases of the Reduction of Spatial Inequalities
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Evolution of Global Inequality

Relative Definition of Old age and Spatial Inequalities

![Graph showing Gini values over time for Ryder's criterion and Age 70.](image-url)
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Clustering: 1806–1880
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Clustering: 1881–1925

Relative lifespan by class: 1881-1925
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Clustering: 1926–1980

Relative lifespan by class: 1926-1980
Urban Penalty in Seine
An Example of Shrinking Region: Nord
Take-home message(s)

A new French subnational mortality database from 1901 onwards

- For each sex, year and department, with civilian, military and deportees mortality
- With an annual update

A large decrease in spatial inequality in mortality from 1881 to 1980

- A decrease in the maximal gap of life expectancy: 3 years in 2014 (30 years in the mid 19th century).
- A decrease in spatial inequalities thanks to the drop in infant mortality, very unevenly distributed over the territory.
- A phase of spatial convergence / increase in national life expectancy almost uninterrupted between 1881 and 1980.
- Spatial inequalities of mortality that no longer decrease since 1980, or even increase among the oldest.