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Spatial Inequality in Mortality in France over the Past Two Centuries

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May 14th 2019 - HMD Symposium

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)

1 Motivation

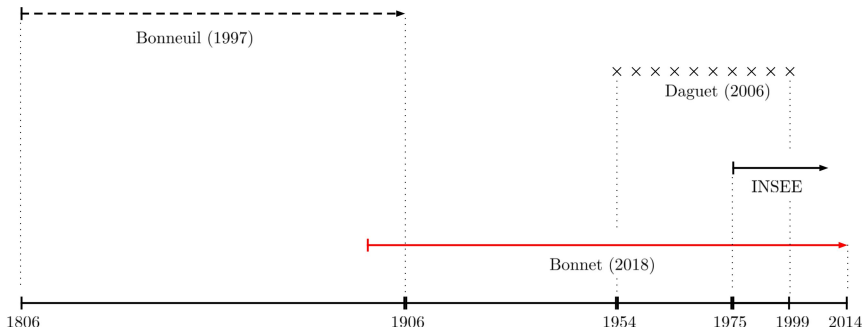
2 Data

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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

Raw Data Gathered: an Example for Civil Deaths

DÉCÈS EN 1905.

TABLEAU XXXVIII. — Décès

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	Ain.....	506	53	35	66	63	29	18	20	16	20	17	22	46	40	46	32	21	12	1	1	1	1,067
2	Aisne.....	968	65	58	107	73	37	27	29	19	19	13	27	26	34	33	51	35	15	5	1	1	1,641
3	Allier.....	427	68	55	75	53	20	19	11	18	9	11	10	12	16	22	24	15	11	7	1	1	886
4	Alpes (Basses-)	228	25	30	17	15	15	8	5	5	8	12	11	19	17	13	13	11	1	1	1	1	454
5	Alpes (Hautes-)	271	23	14	24	18	12	6	9	7	8	8	8	16	12	18	18	5	3	1	1	1	481
6	Alpes-Maritimes	748	71	52	86	72	48	36	24	24	27	30	16	33	40	29	46	18	9	2	1	1	1,411
7	Ardèche.....	975	66	57	117	70	42	28	14	11	17	17	23	48	46	53	38	29	13	1	1	1	1,665
8	Ardennes.....	593	52	37	49	47	20	19	7	13	7	11	11	21	29	26	45	39	15	6	1	1	1,047
9	Ariège.....	283	25	28	20	32	12	13	8	2	8	16	10	19	17	37	30	32	15	4	1	1	620
10	Aube.....	371	26	23	43	37	16	8	6	6	8	13	10	10	13	19	24	15	9	5	2	1	664
11	Aude.....	487	39	42	54	32	28	11	18	12	9	18	17	17	34	40	31	23	13	4	2	1	931
12	Avignon.....	976	64	49	66	64	43	20	16	18	17	10	23	42	41	39	68	55	19	6	1	1	1,637
13	Belfort (Terr.de)	224	17	2	31	26	12	9	14	15	26	13	24	26	37	38	35	33	11	1	1	1	596
14	Bouches-du-Rhône	1,594	157	91	154	174	101	85	65	72	51	75	76	109	93	87	79	51	21	6	2	1	3,143
15	Calvados.....	629	60	47	75	59	32	27	16	30	16	24	24	41	51	61	54	53	26	10	1	1	1,336
16	Cantal.....	396	44	31	40	24	10	13	6	16	8	14	28	31	35	46	56	35	19	13	2	1	867
17	Charente.....	373	41	32	64	39	26	10	8	9	12	14	10	9	15	18	24	15	5	1	1	1	724
18	Charente-Infér...	522	53	68	69	64	30	21	16	15	13	11	14	25	16	19	27	13	16	1	1	1	1,012

Population Movement, Women Deaths in 1905, *Statistique Générale de la France*.

1 Motivation

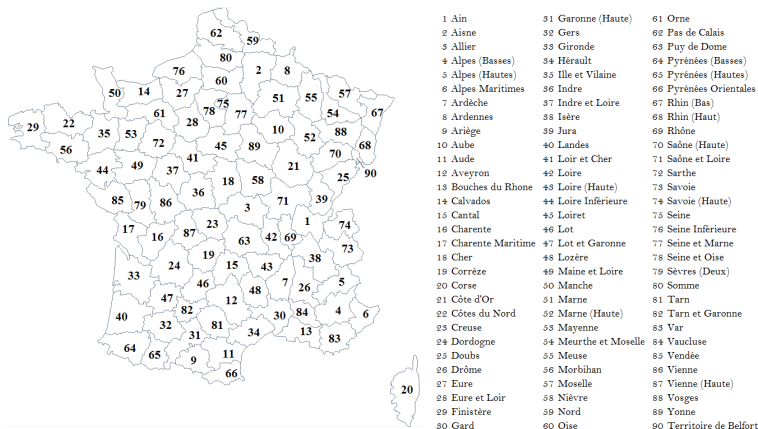
2 Data

3 Evolution of Spatial Inequality in Mortality in France

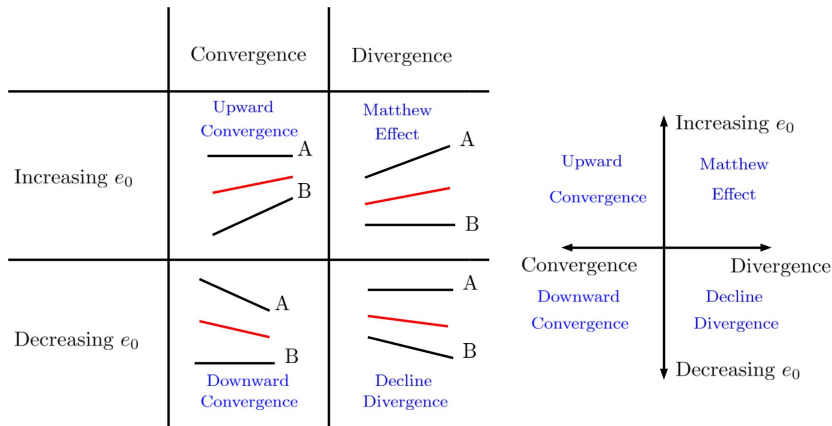
- Evolution of Global Inequality
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Spatial framework

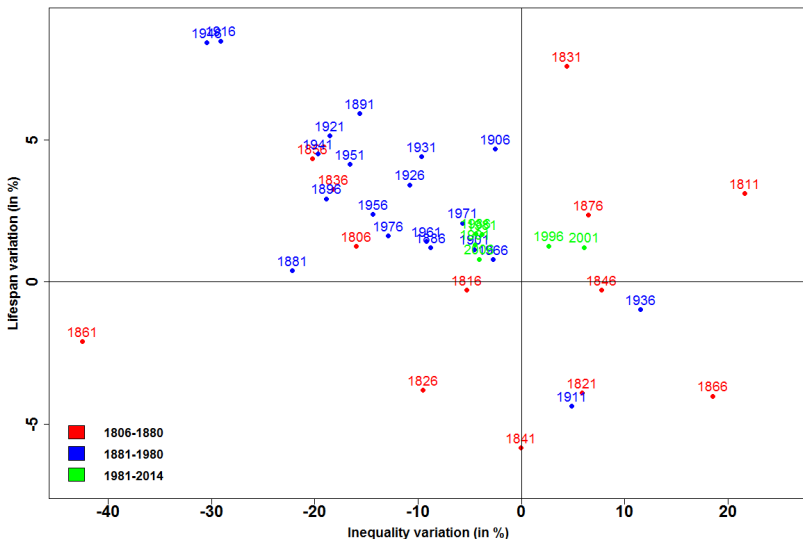
Objective: Stable spatial framework, 90 departments valid in 1967.



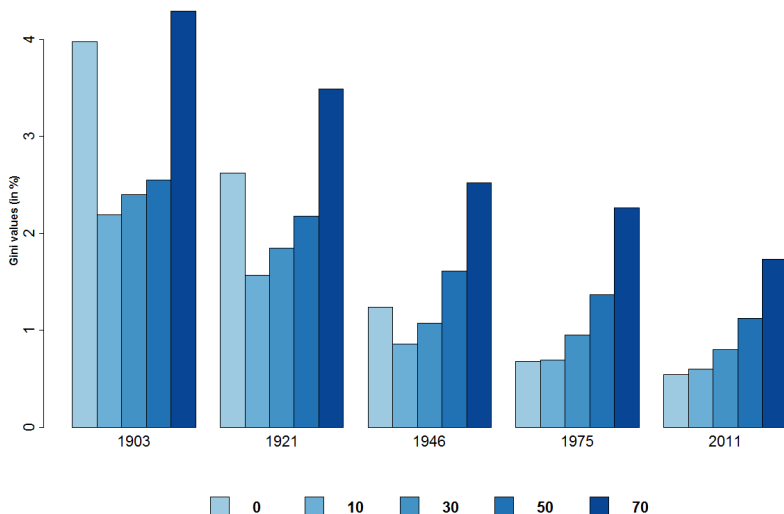
Spatial Inequality and Increase in Life Expectancy



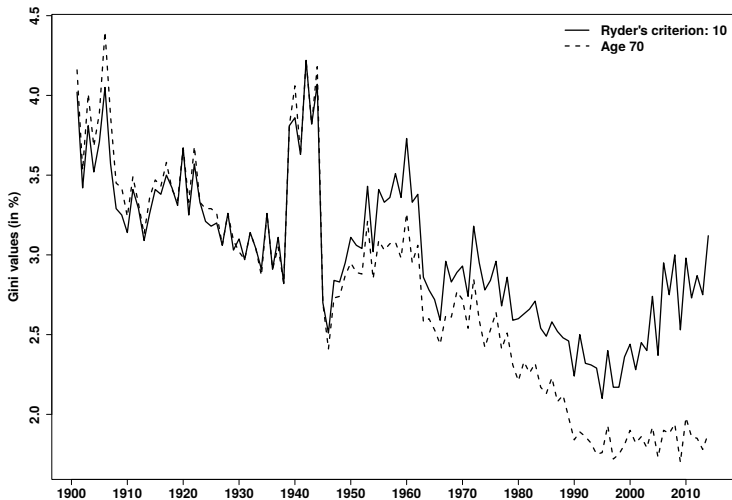
The Three Phases of the Reduction of Spatial Inequalities



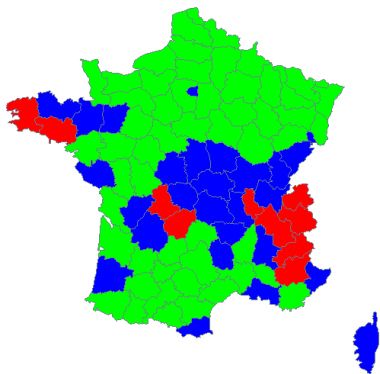
Infant Mortality and Spatial Inequalities



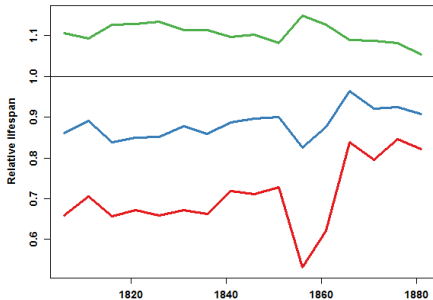
Relative Definition of Old age and Spatial Inequalities



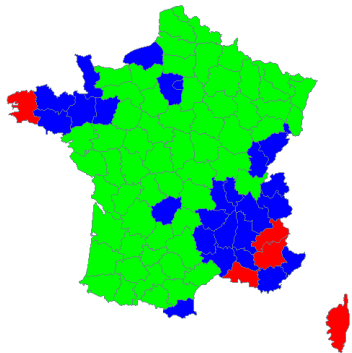
Clustering: 1806–1880



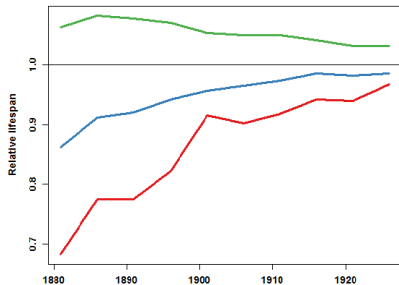
Relative lifespan by class: 1806-1880



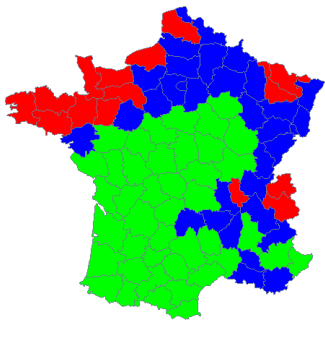
Clustering: 1881–1925



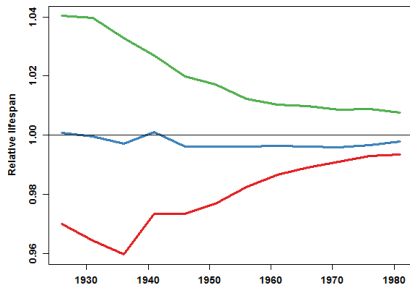
Relative lifespan by class: 1881-1925



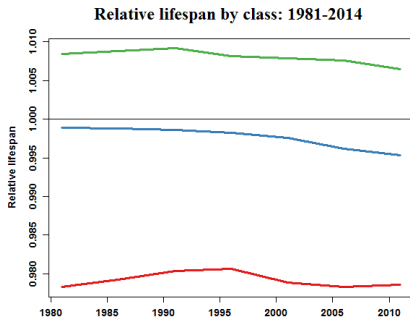
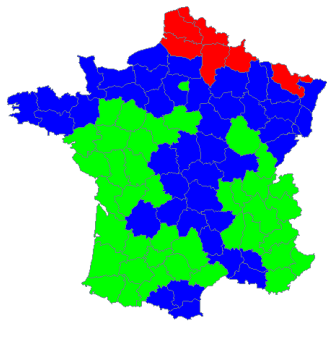
Clustering: 1926–1980



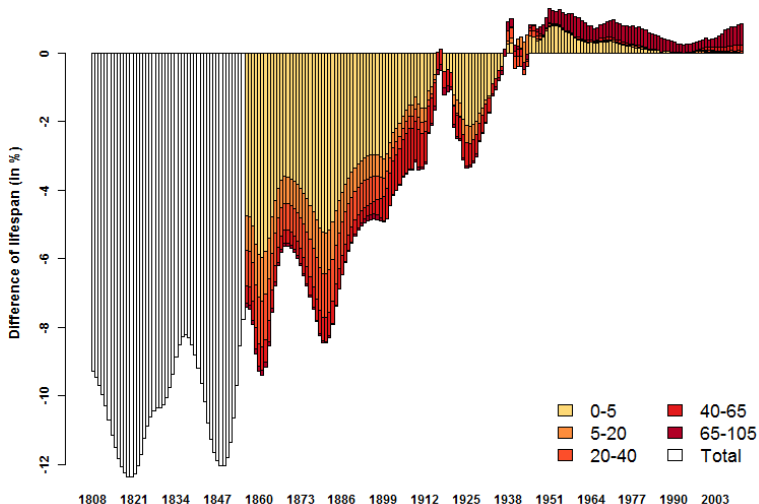
Relative lifespan by class: 1926-1980



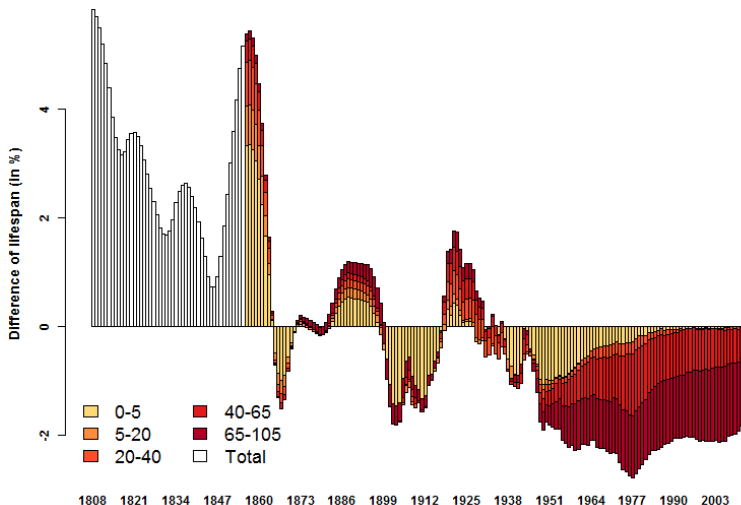
Clustering: 1981-2014



Urban Penalty in Seine



An Exemple 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.