

The French National Health Insurance Claims Databases in France, SNIIRAM and EGB: A Whole-Country 66 Million Persons Resource for PharmacoEpidemiology

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Abstract

Background: Population claims databases usually have large size and exhaustiveness, but may suffer from uncertain representativeness when the presence in the database depends on factor such as employer, social status or age. Universal medical coverage as in Canada for instance avoids these limits, but represent small provincial populations as do the Nordic countries in Europe. The combination of small individual bases, as in CNODES, or EU-ADR can avoid some of these limitation, but inhomogeneity of data coding or structure require recoding or the use of common data models. In this context, the emergence of a large countrywide persistent database is welcome.

Objectives: Describe SNIIRAM, the French National claims database.

Methods: National insurance claims database, linked to hospital discharge database and death registry.

Results: The French healthcare system offers universal coverage. The SNIIRAM database links anonymous claims, with hospital-discharge summaries (PMSI) and the national death registry. It now covers 99 % of the French population, over 66 million persons, from birth or immigration to death or emigration, making it one of the world's largest continuous homogeneous claims database. The database includes demographic data; healthcare encounters such as physician or paramedical visits, medicines, medical devices, lab tests (but not results); chronic medical conditions; hospitalisations with for primary, linked and associated ICD10 diagnoses, procedures, diagnostic groups, and costs; date but currently not cause of death. The power of the database is correlatively great, and its representativeness is guaranteed. EGB (*Echantillon Généraliste de Bénéficiaires*) is the 1/97th random permanent representative sample of SNIIRAM. It is easier to access, but its power is less (780 000 subjects). This is enough to study common issues with older drugs, but may be limited for new products or rare events.

Conclusions: The main difficulty, beyond size and complexity, is the administrative process for access, which can last one to two years. New legislation is being implemented, allowing private companies to access the data, and streamlining procedures. Users will be accredited, demonstrating proficiency and independence. Studies will have to demonstrate public health usefulness, transparency and reproducibility, requirements similar to ENCEPP. The legal environment will be complete by April and consolidated by the time of ICPE.

Conflict of Interest Statement

- None

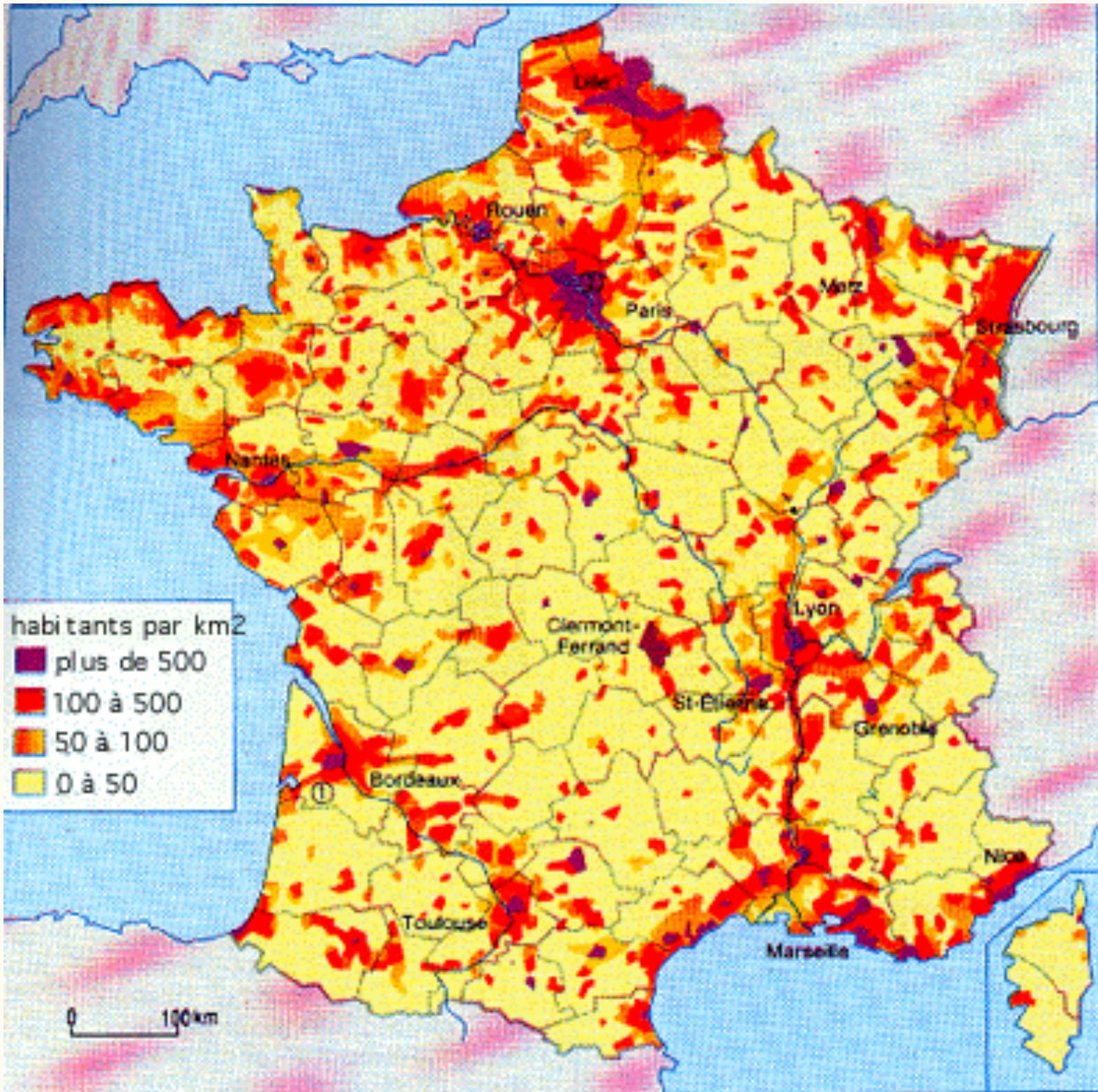
Background

Population claims databases usually have the advantage of large sizes and exhaustivity of data, but may suffer from uncertain representativeness when the presence in the database depends on factor such as employer, social status or age. Universal medical coverage as in Canada and in Nordic Countries avoids these limits, but often represent small populations, despite the quality of their data. The combination of small individual bases, as in CNODES, SENTINEL, or EU-ADR can avoid some of these limitation, but inhomogeneity of data coding or structure requires specific recoding, or the use of common data models. In this context, the emergence of a single large countrywide persistent database is welcome.

Objectives

- To describe the French nationwide healthcare data system (SNDS), linking several databases: outpatient claims (SNIIRAM), public and private hospital discharge summaries (PMSI), death and medical causes (CépiDC) and disability (CNSA).

Results



France key demographics

- **66.6 Million inhabitants**

- **219 834 Physicians**

- 102 140 GP
- 117 694 Specialists
 - 67 039 medical
 - 25 802 Surgical
 - 14 831 Psychiatrists
 - 6 796 Cardiologists
 - 4 076 Dermatologists
 - 3 570 GE/Hep
 - 2 598 Rheumatologists
 - 2 289 Neurologists
- ...

French healthcare system

- Universal, mandatory coverage (called Social Security, paid on salaries and other gains) complemented by mutual funds or private insurance companies
- The health care system covers, to various degrees, most medical expenses, with patient copay except for diseases with 100% coverage (see below)
- 3 mains programs, 19 smaller ones.
- General practitioners and most specialists are in private practice. Secondary care is by private clinics or local hospitals, and tertiary care by public university hospitals and regional cancer centers
- Freedom of choice of a referent physician, access to specialist through referent physician, freedom of prescription, and free access to hospital

French nationwide healthcare data system (SNDS)

- Contains continuous data on about **99% of the 66.6 million persons** of the French population from birth (or immigration) to death (or emigration), even if a subject changes occupation or retires,
- **Making it one of the world's largest homogeneous claims database**
- Merges several databases using unique pseudonymised patient numbers
 - Outpatient claims database (SNIIRAM)
 - Hospital discharge summaries database (PMSI)
 - Death registry (CépiDC)
 - Disability database (CNSA), *not yet available*
- EGB is a 1/97 permanent random sample of the SNDS

The Outpatient claims database (SNIIRAM) includes

- Gender, date of birth, localization of residence, indicator of low income.
- Long Term Disease (LTD) registration with start and end dates (costly chronic diseases, with ICD-10 codes). It is requested by the patient's practitioner and medically validated by the health insurance system. Once registered, patients receive full reimbursement for expenditure related to the LTD
- Outpatient reimbursed healthcare expenditures: medical visit and procedures, most prescribed drugs, including some also available OTC, such as ibuprofen or paracetamol, devices, paramedical activities such as nursing or physiotherapy, transports, sick leaves, disability allowances... with prescriber and professional caregiver information (specialty, private/public practice), dates of prescription and dispensation, and lab test codes, but not the medical indication nor lab test results
- Data are regularly uploaded but it takes about 6 months to have 98% of the information available

Hospital discharge summaries database (PMSI)

- ICD-10 codes for primary diagnosis, associated diagnosis, and linked diagnosis for ICD-10 Z-codes (e.g. chemotherapy), for all private and public medical, obstetric and surgery hospitalizations, with the date and duration of hospitalization, medical procedures, and cost coding system (Diagnostic Related Group), as well as most very expensive drugs. The hospital discharge summary includes the medical unit summaries
- Data from psychiatry, and rehabilitation centers are also available but not yet in EGB
- PMSI is available yearly, in the third trimester for the previous year

National death registry (CépiDC)

- To date, only date of death is available in the SNDS. Causes of death are scheduled to be available soon (end of 2017 / beginning of 2018)

SNDS access - <https://www.snnds.gouv.fr/SNDS/Accueil>

- A new process was adopted by Parliament in 2016, with the creation of a single gatekeeper, INDS (National Institute of Healthcare Data)
- Access to SNDS data is for research with public health interest
- Access to SNDS itself is subject to approval from national data protection agency (CNIL) after advice from a committee on healthcare data research (CERES)
- The linkage of individual patients to their claims data is now possible after authorization by a committee for protection of persons involved in biomedical research (CPP) and CNIL, and of course patient consent
- Data access can be requested by any legitimate entity, public or private, as long as the study objectives are in the interest of public health, and means are provided to ensure confidentiality, integrity, and traceability of data and its usage, and the information is not used for drug promotion
- Pharmaceutical companies can access SNDS via accredited public or private research organizations or directly if they can ensure they cannot use the data to promote their drugs
- Considering the complexity of the data and the steep learning curve, it is expected that most access will be through specialized entities

Examples presented at 33rd ICPE

Oral communications

- M. Duong et al. Cardiovascular Safety of OTC Strength Ibuprofen and Paracetamol in a Representative Sample of the French National Healthcare System Database [75], (Cardio) Vascular Safety Outcomes (OR11), Monday 6:00pm room 524B
- J. Bezin et al. Risk of Trauma-Related Hospitalisation and Use of H1 Antihistamines or Anticholinergic Drugs [356], Un mélange d'idées (A Mixture of Good Ideas) (OR36) Monday 8:00am room 520BE
- J. Bezin et al. Effectiveness of Combinations of Drugs Recommended for Secondary Prevention After Acute Coronary Syndrome [414], Strike Stroke Stricken -- Cardiovascular Potpourri (OR12), Tuesday 2:00pm room 524C
- P. Blin et al. Effectiveness and Safety of Ticagrelor Compared to Clopidogrel and Prasugrel: Results from a Cohort Study in the Nationwide French Claims and Hospitalisation Database (SNIIRAM) [728], Better, Worse, or the Same? (OR21), Wednesday 8:30am room 520AD
- P. Blin et al. Effectiveness and Safety of Direct Oral Anticoagulants Versus VKA: A Cohort Study of About 100,000 Non-Valvular Atrial Fibrillation from the Nationwide French Claims and Hospitalisation Database [733], Better, Worse, or the Same? (OR21), Wednesday 9:45 room 520AD

- **Posters** 202/88, 430/H, 565/112, 603/150, 604/151, 632/179, 651/198, 652/199, 858/20, 891/53, 920/82, 922/84, 923/85

Conclusions

The development and availability of SNDS brings another major actor to pharmacoepidemiology, providing a nationwide resource with tremendous power. The main difficulties are time to access, and complexity of the data, with a steep learning curve. Considering the tremendous efforts put into it by its managers over the last years, SNDS is poised to take its place as a major participant in future collaborative studies.

Publication: Bezin J et al. Pharmacoepidemiol Drug Saf. 2017;1–9