

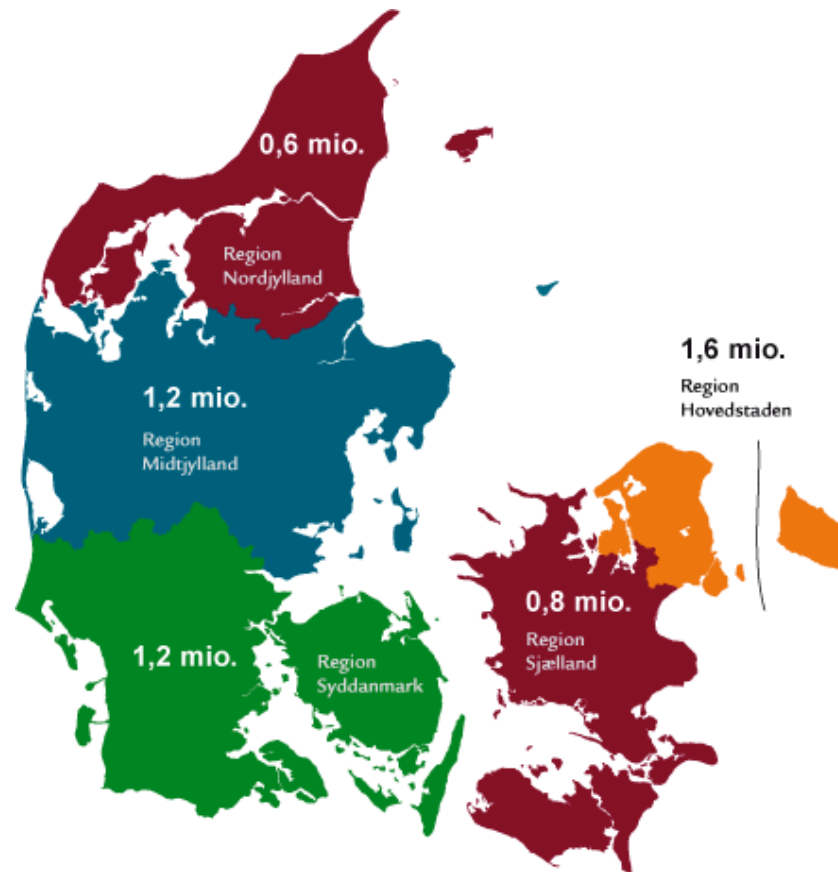
Medicine registers in Denmark

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Geographical bias in this presentation



Dispensing registers in Denmark used for pharmacoepidemiologic research

- Odense University Pharmacoepidemiologic Database, OPED, Funen (1990)
- Northern Jutland, PDNJ (1991)
- Aarhus (1996)
- Viborg (1998)
- Research registers in Statistics Denmark:
National register of drug statistics of the Danish
Medicines Agency (1995)

Sources of pharmacy dispensing data

- Regional health insurance registers
 - Data from pharmacies to regional health insurance
 - Drugs in the general reimbursement scheme: All dispensings, regardless of copayment
 - Drugs with individual reimbursement: Only reimbursed dispensings
- National register of drug statistics
 - Data from pharmacies to the Danish Medicines Agency
 - All prescriptions dispensed at community pharmacies
 - Drugs on prescription regardless of reimbursement

Even more geographical bias



Odense PharmacoEpidemiologic Database (OPED)

- All computer-registered purchases of reimbursed prescription drugs in pharmacies of Funen County (population 470,000) since October 1990
- Complete for the whole county since November 1992
- West Zealand 2000
- Region of Southern Denmark 2007 (1.2 million)
- Data on the individual level (CPR-number)
- Anonymised version available
- Research registry maintained by the university

Data recorded in OPED

Prescription data

- CPR-number of patient
- Date of purchase
- Package number
 - Package
 - Volume
 - Strength
- Dispensing form
- ATC-code and DDD
- Number of packages
- Pharmacy
- Prescribing practice
- Price and reimbursement

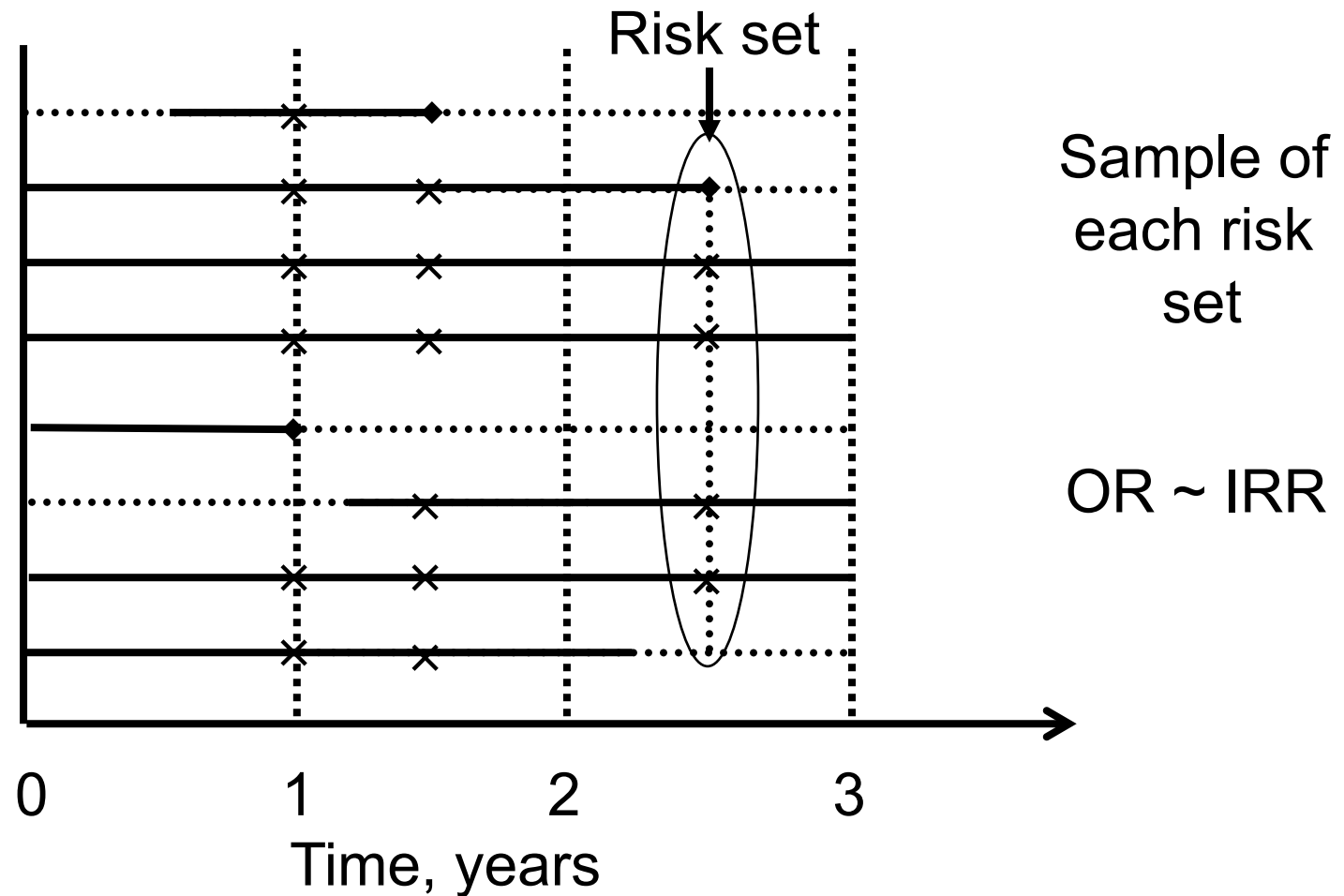
Population data

- CPR-number
- Date of birth
- Sex
- Municipality of residence
- Dates of migration
- Date of death

Examples of health registers for record linkage

- Central person register (demographic data also included in OPED)
- National and regional patient registers (hospital admissions)
- National psychiatric register
- National cause of death register
- Cancer register
- General practitioner register (physicians, practices, patients)
- Register of general practice services (contacts, reimbursement, no diagnoses)
- Danish General Practice Database (drugs actually prescribed, diagnoses, clinical data, the near future?)

Sampling controls from demographic data



Access to regional dispensing registers

- Apply for use of to data owner (e.g. Clinical Pharmacology, University of Southern Denmark)
- Permission from National Data Protection Board (Datatilsynet) needed
- Special requirements regarding data security (separate identifiers from other data)

National register of drug statistics

- Data collected by the Danish Medicines Agency
- Available under the research registers in Statistics Denmark
- Anonymous data, person identifier not accessible
- Record linkage to other registers in Statistics Denmark
 - Health registers
 - Demographic data (residence, migration, death, family)
 - Socioeconomic data (education, occupation, employment status, income)

National register of drug statistics

- Apply for use of data to Statistics Denmark (automatically handles other permissions)
- Authorised research institutions offered remote access
- Externally acquired data with CPR-number can be linked to the research registers (one-way procedure)
- Programs for data processing and analysis can be e-mailed and placed on server
- On-line access (secure connection)
- Results e-mailed back to user (screened for misuse: single records or person identifiable data)

National or regional data?

National data

- Advantages
 - Complete coverage
- Disadvantages
 - CPR-number not accessible
 - Difficult data processing
 - Careful planning needed

Regional data

- Advantages
 - Access to medical records
 - Access to patients
- Disadvantages
 - Non-reimbursed drugs

Incomplete coverage of regional registers

- Non-reimbursed drugs
 - Benzodiazepines
 - Oral contraceptives
 - Certain antibiotics
 - ASA (only when prescribed to acquire reimbursement)
 - Paracetamol (only when prescribed to acquire reimbursement)

Information missing in all the current dispensing registers

- OTC use
- In-hospital use
- Certain expensive drugs dispensed through hospital pharmacies/outpatient clinics
 - HIV treatment
 - Anti-tuberculosis drugs
 - Biologicals
- Indication for drug (diagnosis)
- Recommended dosage