



The role of cancer registration in research on occupational and environmental carcinogens

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Need for cancer registration

Global status report
on noncommunicable diseases
2010

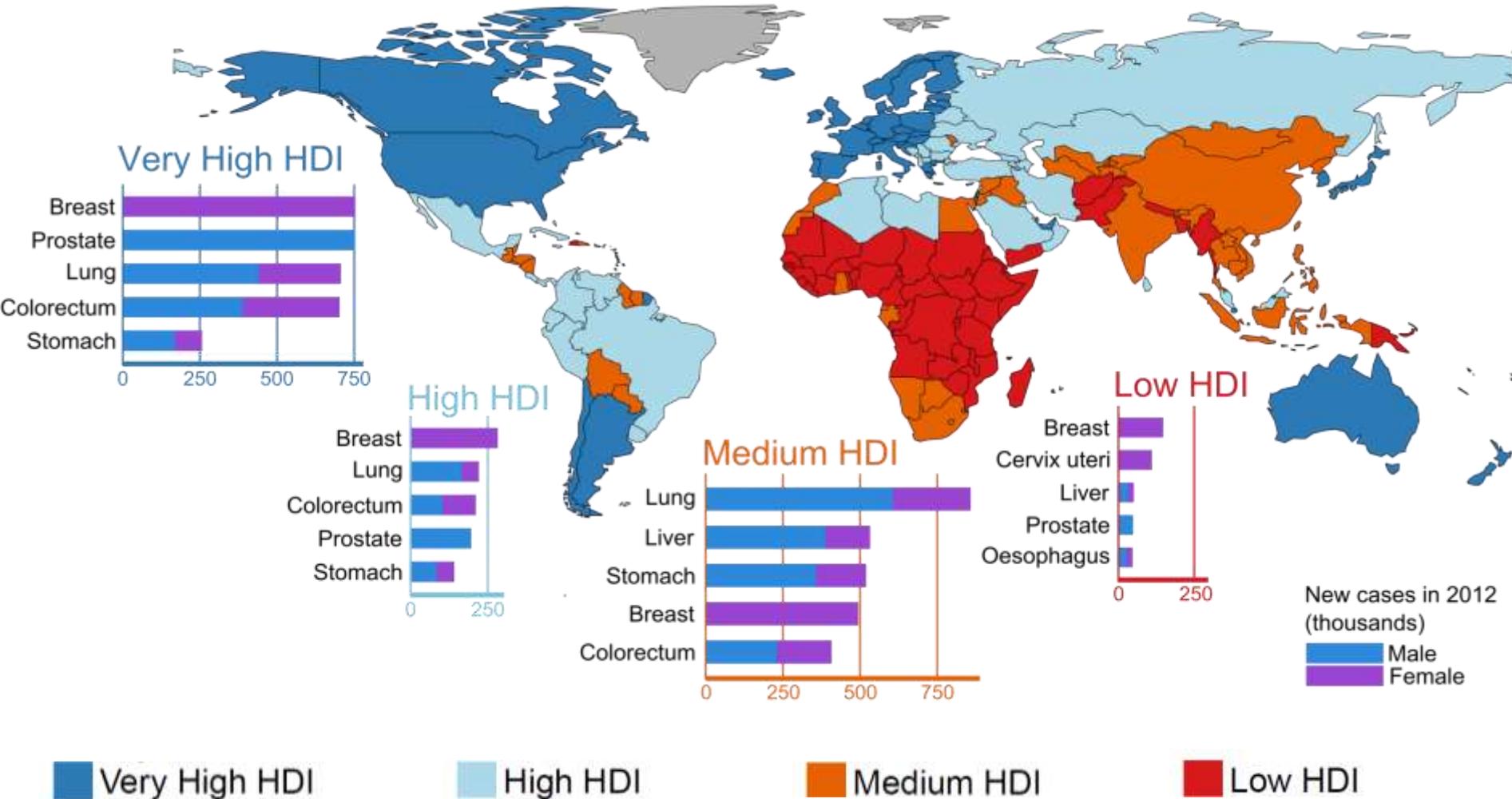


Key messages

Population-based cancer registries play a central role in cancer control programmes because they provide the means to plan, monitor and evaluate the impact of specific interventions in targeted populations.

International Agency for Research on Cancer

Five most common cancers in 2012 by HDI



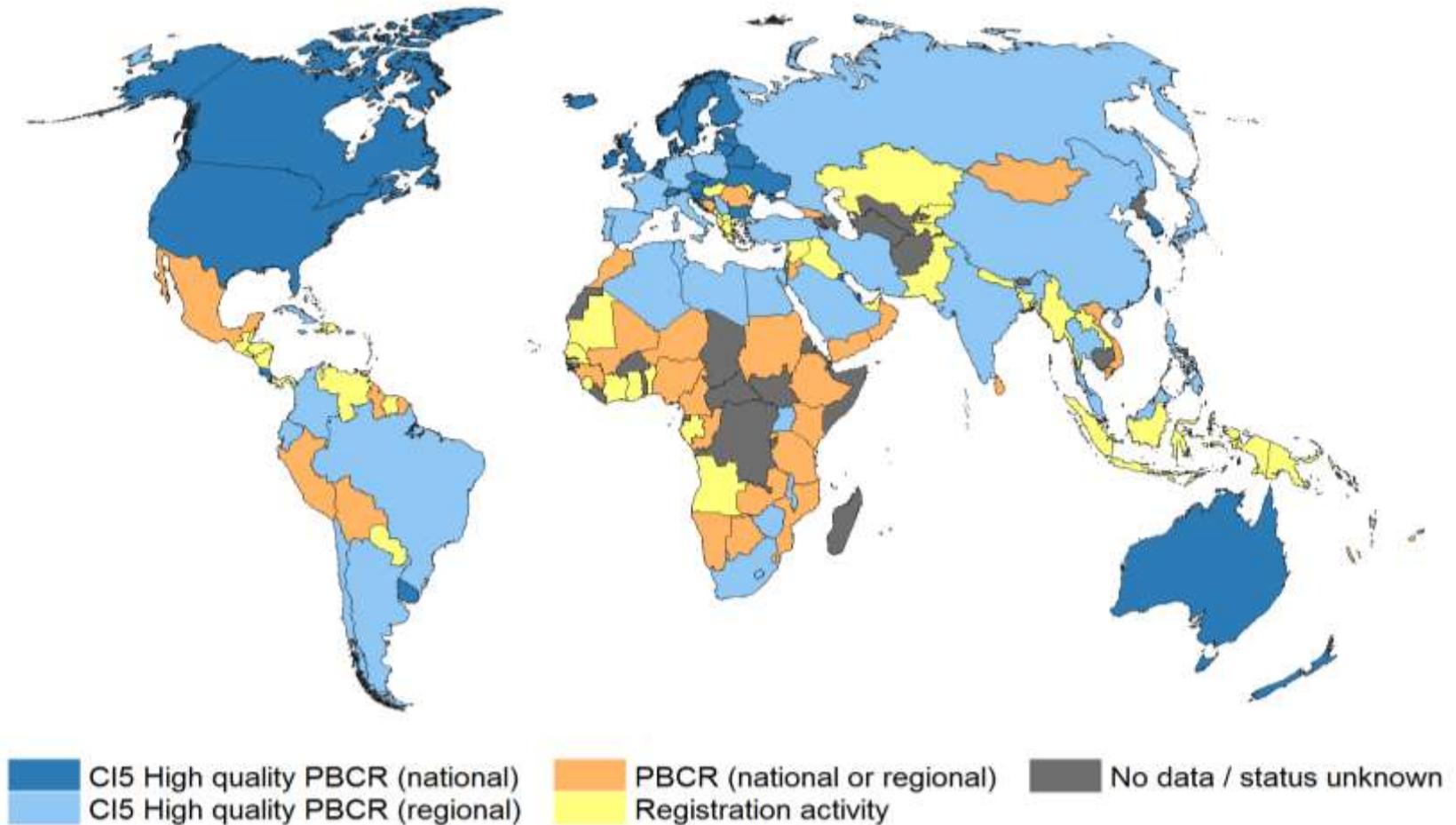
Projected burden of cancer: World (2012-2030)



Assuming no change in underlying incidence

Population-based cancer registration

Global Status of Cancer Registration



The GICR

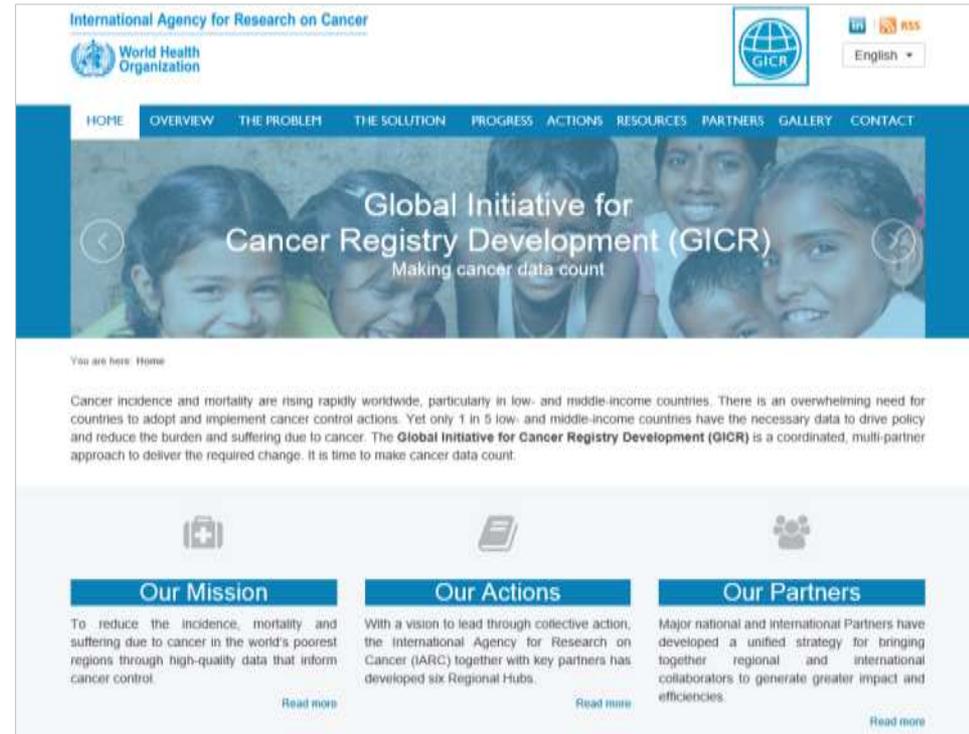


A process to change the scope and pace of cancer control information

- Phased objectives through IARC Regional Hubs to target 20 LMIC by 2020 and a further 30 by 2025

Significant Developments:

- Governance model with an inclusive partnership approach
- Regional expansion: a transition to implementation
 - Four Hubs launched, two in development; three-year operational plans
- Resource mobilization using revised communication tools



Need for cancer registration

Hospital-based cancer registries:

- Collection of cases in a certain hospital
- Clinical relevance, such as treatment related analyses
- Rarely representative of cancer burden in population

Population-based cancer registries:

- Collection of all cases in defined catchment area
- Description of cancer burden
- Starting point for epidemiological research
- Early warning system of changes in cancer burden

Population based cancer registries

Challenges:

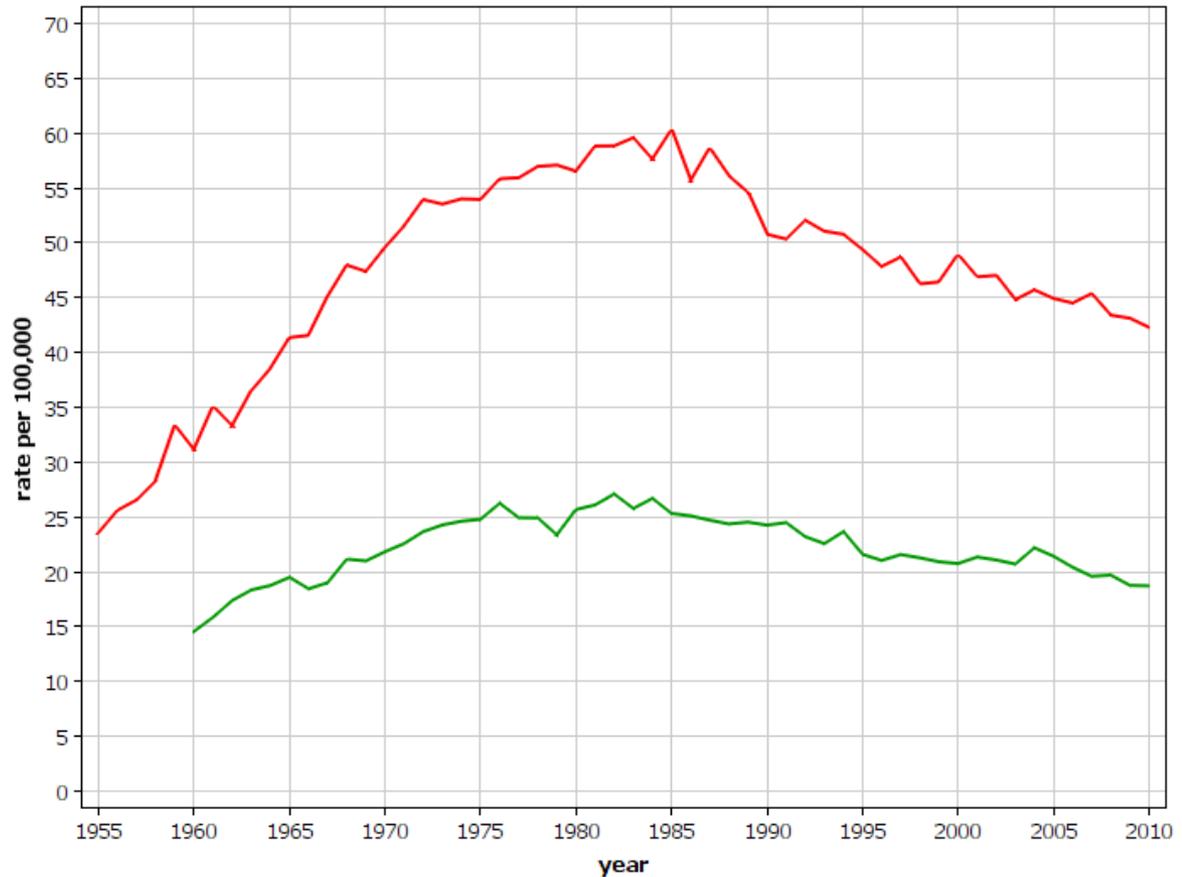
- Complete ascertainment of cases residing in catchment area
- Definition of population under risk in catchment area

Observing changes in incidence:

- (actual) changes in underlying risks
- (actual) changes in underlying population at risk
- Better detection or diagnosis, earlier diagnosis
- Other effects:
 - improved registration
 - cancer classification
 - reducing under-diagnosis
 - cancer awareness

Changes in underlying risks

Lung
Incidence: ASR (World), Male age 0-85+

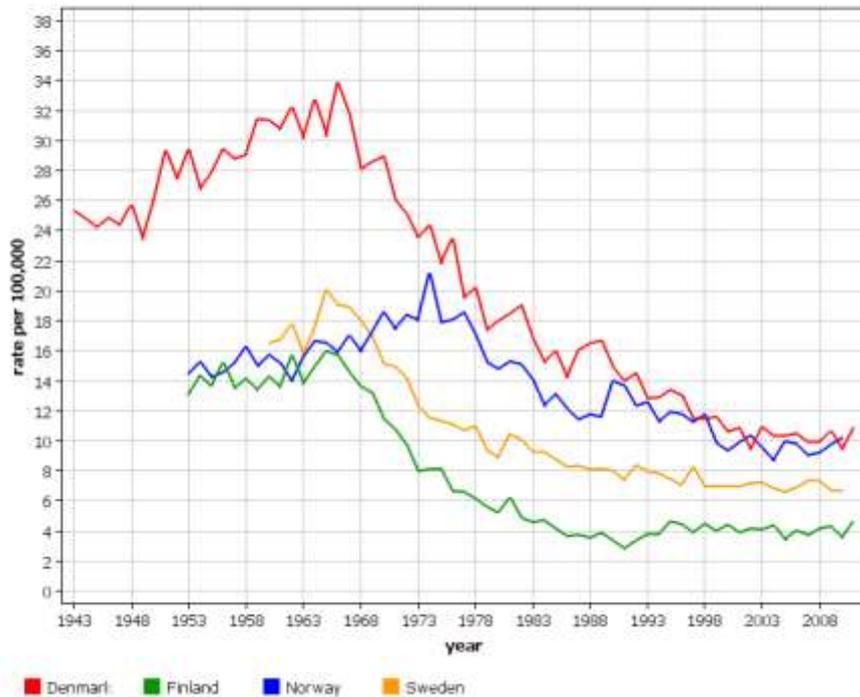


Lung cancer risk in Danish and Swedish males over time, influenced by changing smoking behaviour in the underlying populations

Changes in detection

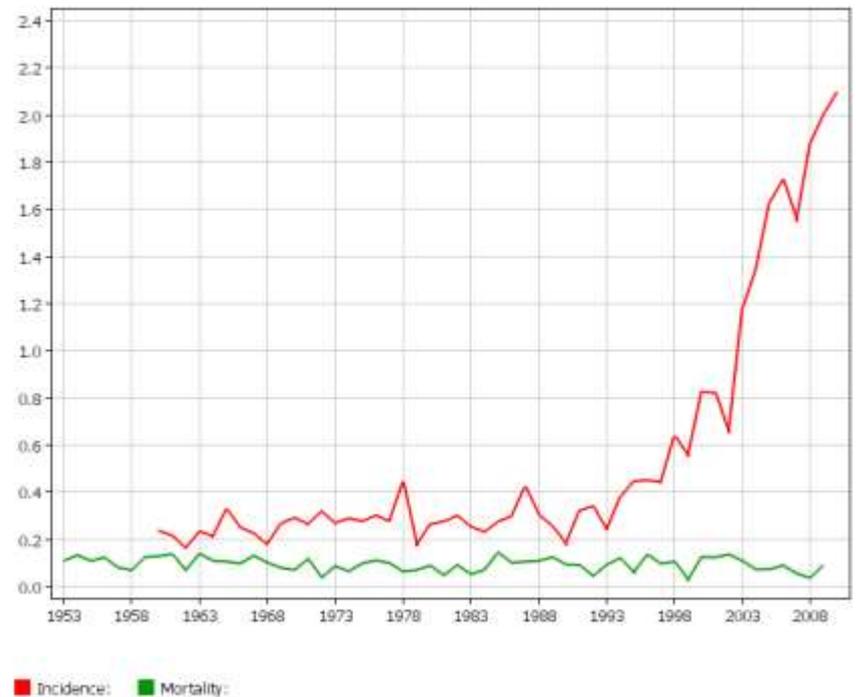
Systematic cervix screening

Cervix uteri
Incidence: ASR (World) age 0-85+



Opportunistic PSA screening

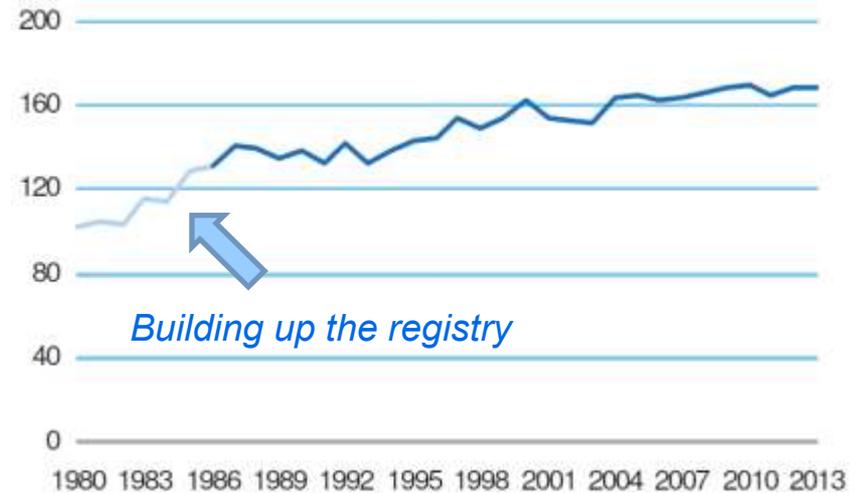
Nordic countries
Prostate
ASR (World) age 0-49



Challenge: Completeness

Problems:

- Better completeness over time may be misinterpreted as increase in the cancer incidence
- Completeness levels varying by region may be misinterpreted as « local clusters » of cancer



Incidence of childhood cancer (per million),
Germany 1980-2013

<http://www.kinderkrebsregister.de>

Role in occupational and environmental cancer research

Cancer control:

- Changes in incidence following preventive measures (if anticipated effect is sufficiently large)

Aetiological research:

- Register-based occupational cohort studies
- Source of identification of cases for analytical studies

Hypothesis-generating:

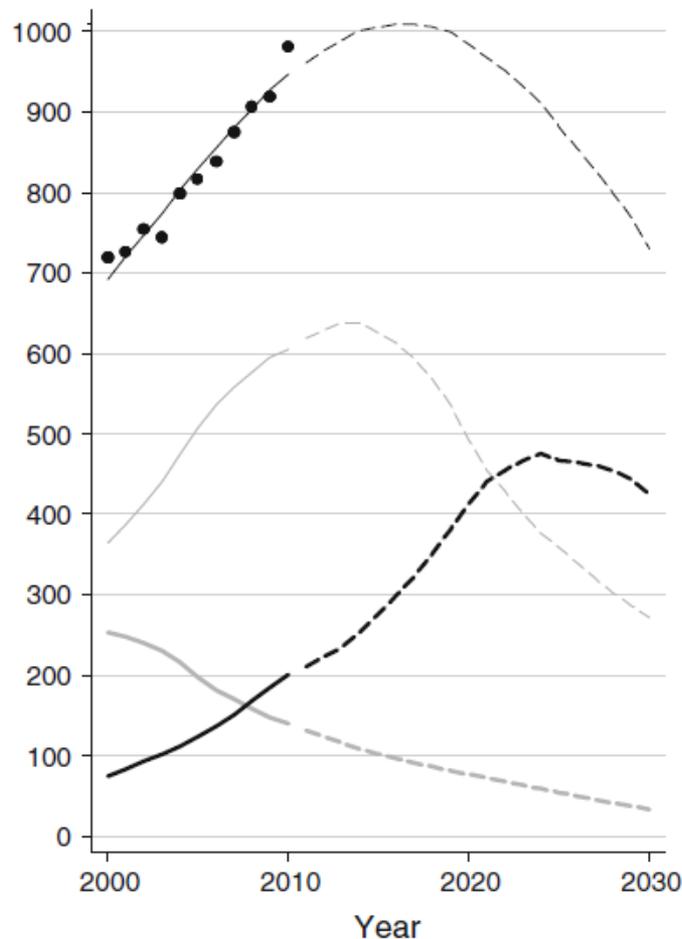
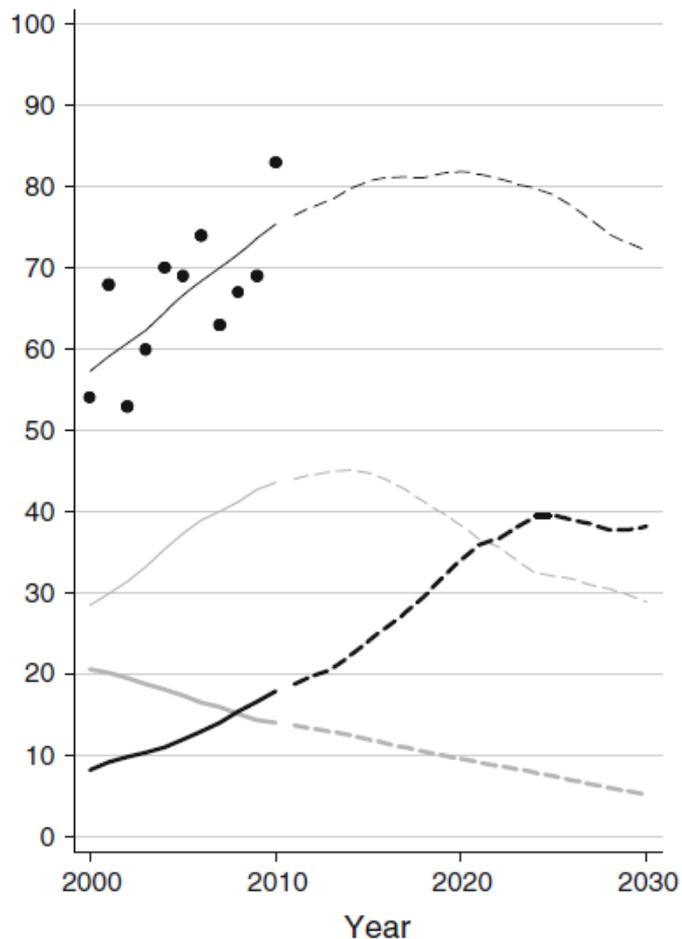
- Observing time trends and cohort effects
- Observing geographical variation and by other sociodemographic factors

Cancer control: Asbestos ban, Germany

Mesothelioma mortality, absolute number of deaths

Eastern part

Western part



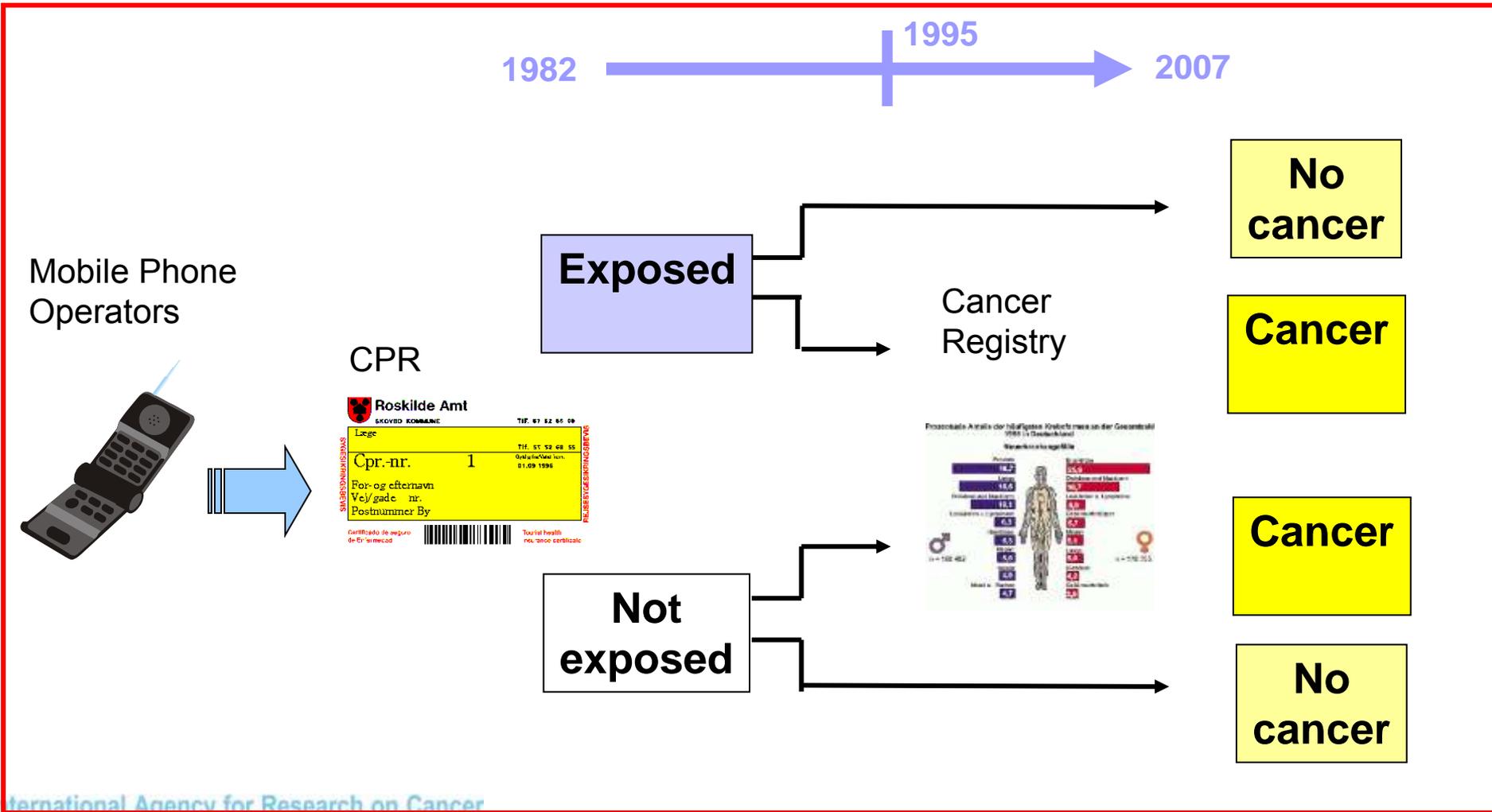
All ages

Ages 80+

Ages 65-79

Ages <65

Register-based cohorts: Mobile phone subscribers, Denmark

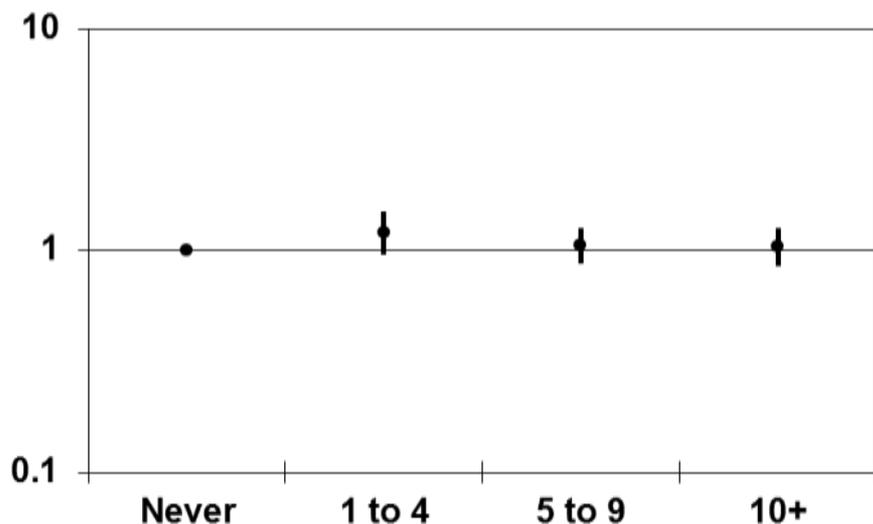


~720,000 records → 420,095 individuals → 14,249 cancers

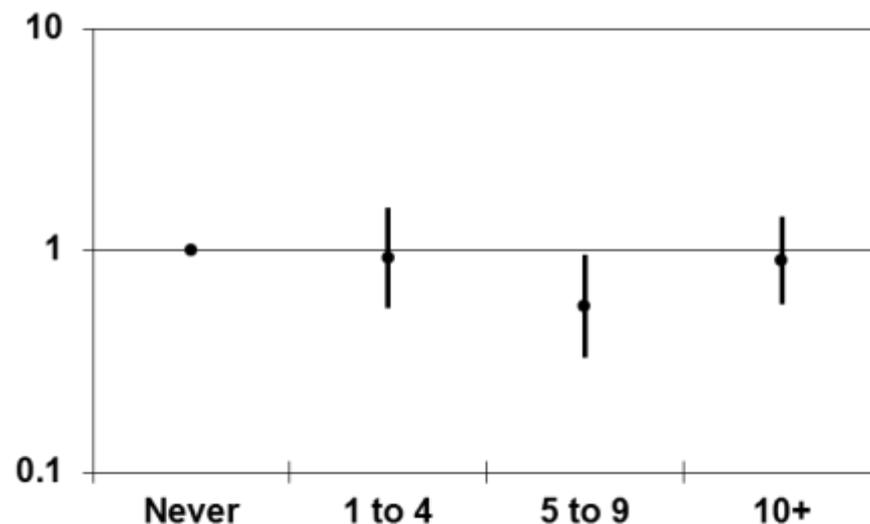


Register-based cohorts: Mobile phone subscribers, Denmark

Glioma



Meningioma



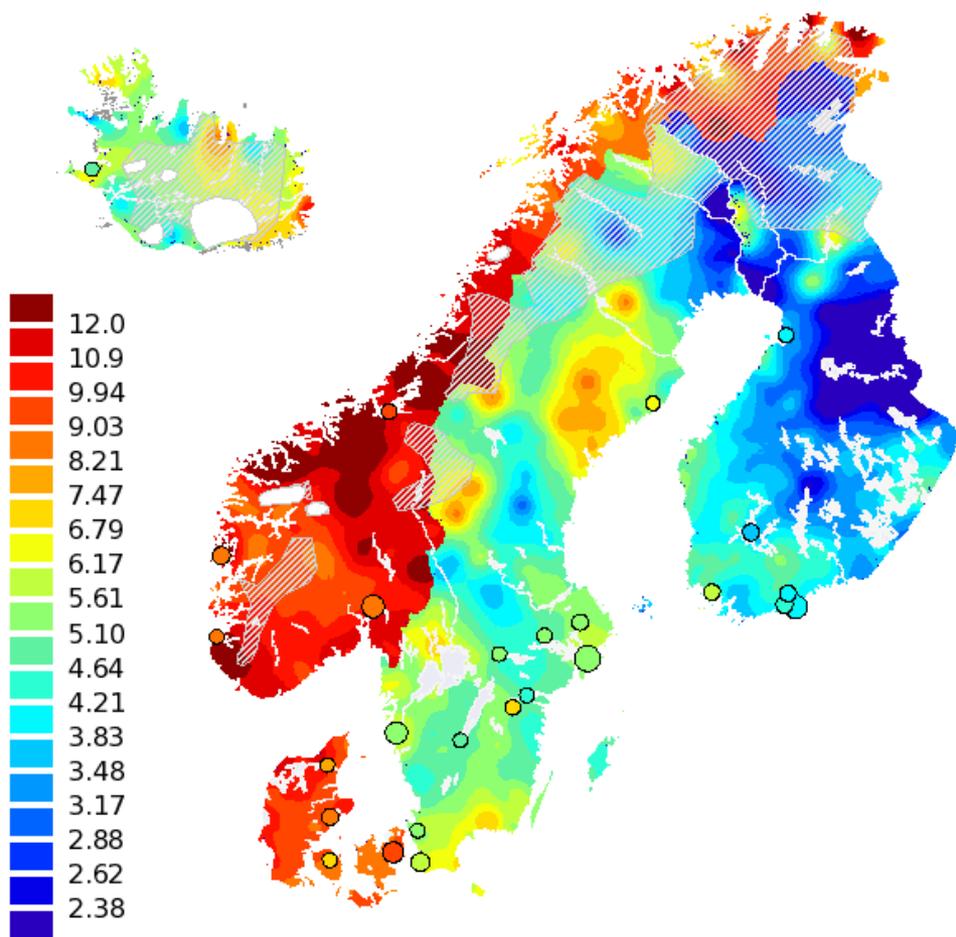
Years of subscription

In men

Hypothesis-generating: Testicular cancer incidence, Nordic countries

Testicular cancer, 1998-2003

Incidence / 100,000.



Finnish Cancer Registry 21.06.2007

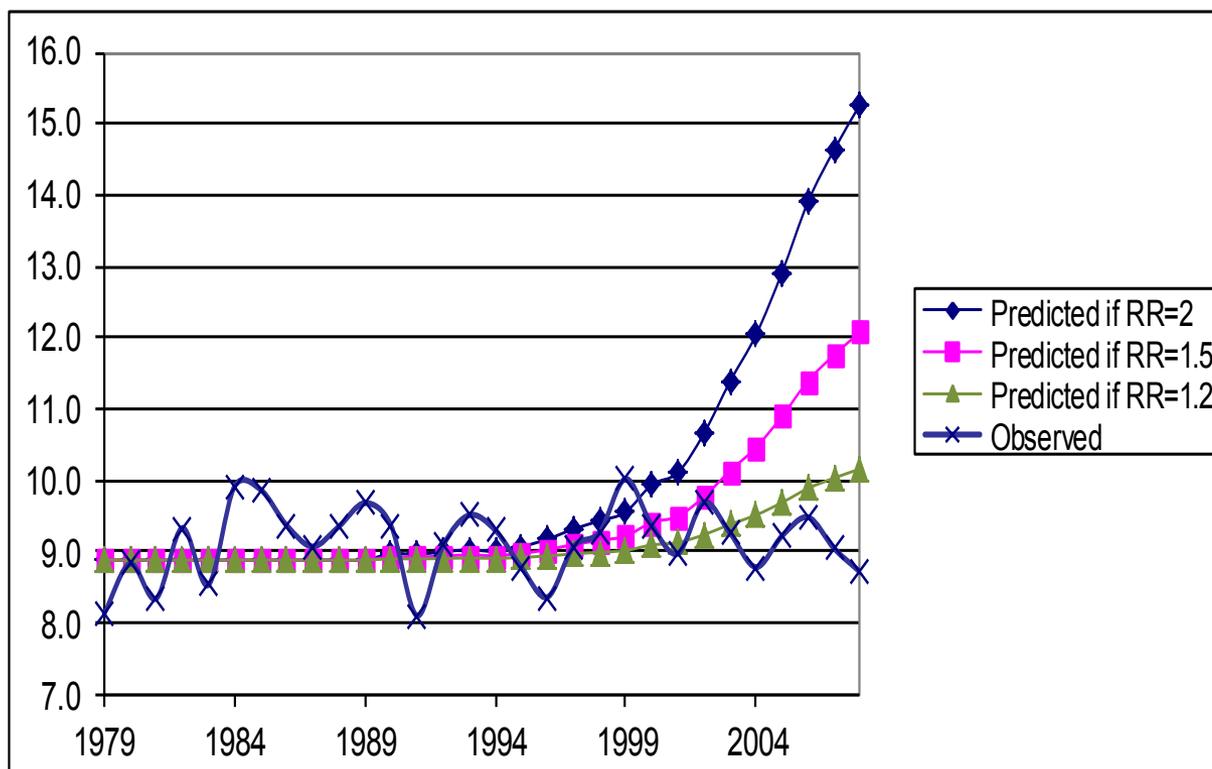
Distinct geographical patterns in incidence

Risk in immigrants reflects those of their home country while second-generation adapts to host country

Exposures in early life or before birth may matter

Hypothesis-generating: Consistency check – mobile phones and glioma

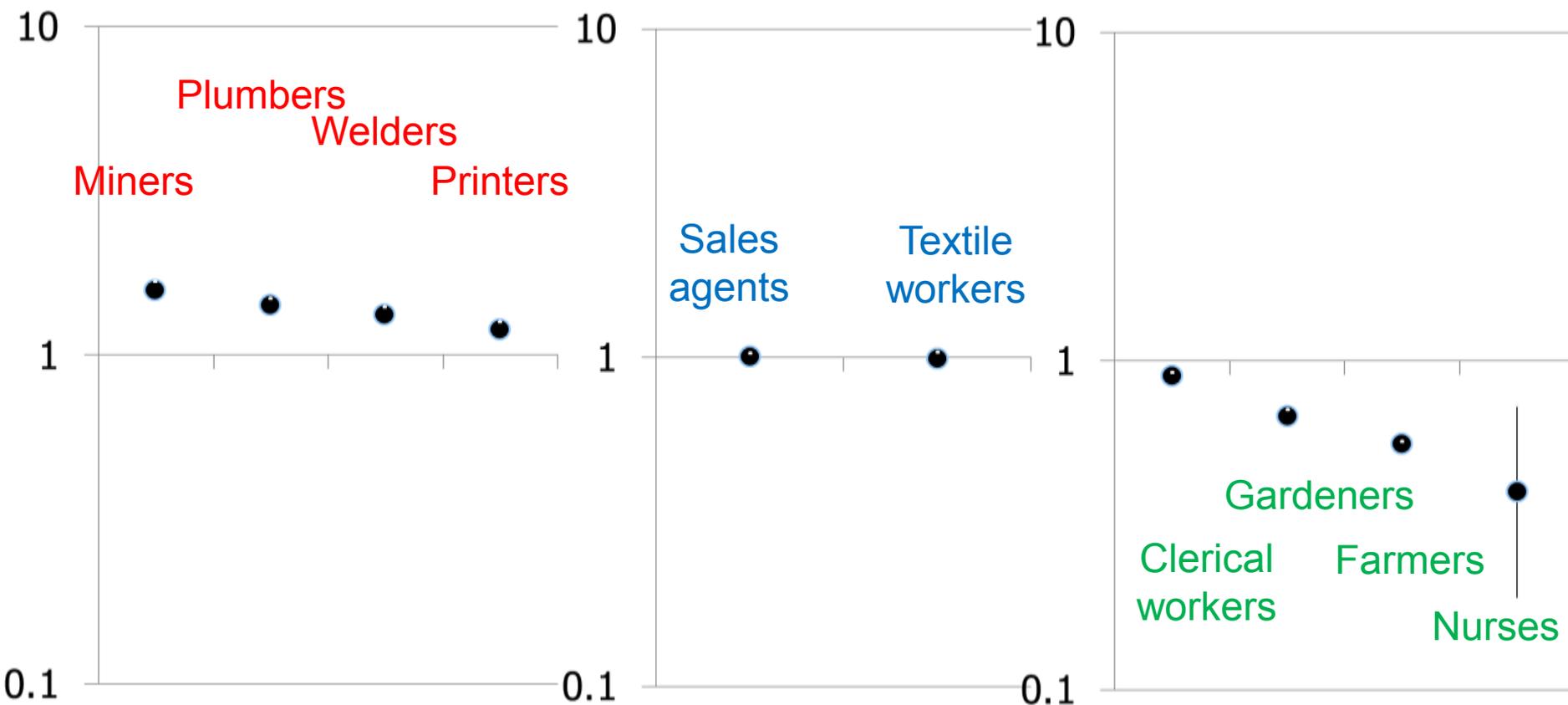
Male mobile phone users at increased risk after 10 years



Modelled incidence rate time trend of glioma versus observed

Hypothesis-generating:

Observed lung cancer risk by occupation, Nordic countries (males)



Conclusions

- Population-based cancer registries (PBCR) play key role in cancer control
- PBCR have important roles in occupational and environmental cancer research:
 - monitoring of preventive measures
 - source of cases in epidemiological studies
 - hypothesis-generating by monitoring changes in trends over time, location and other factors
- *Challenge*: Incomplete registration may give misleading results