



EUROPEAN HEALTH CARE OUTCOMES,
PERFORMANCE AND EFFICIENCY

Health system performance evaluation by integrating data across health and social care services

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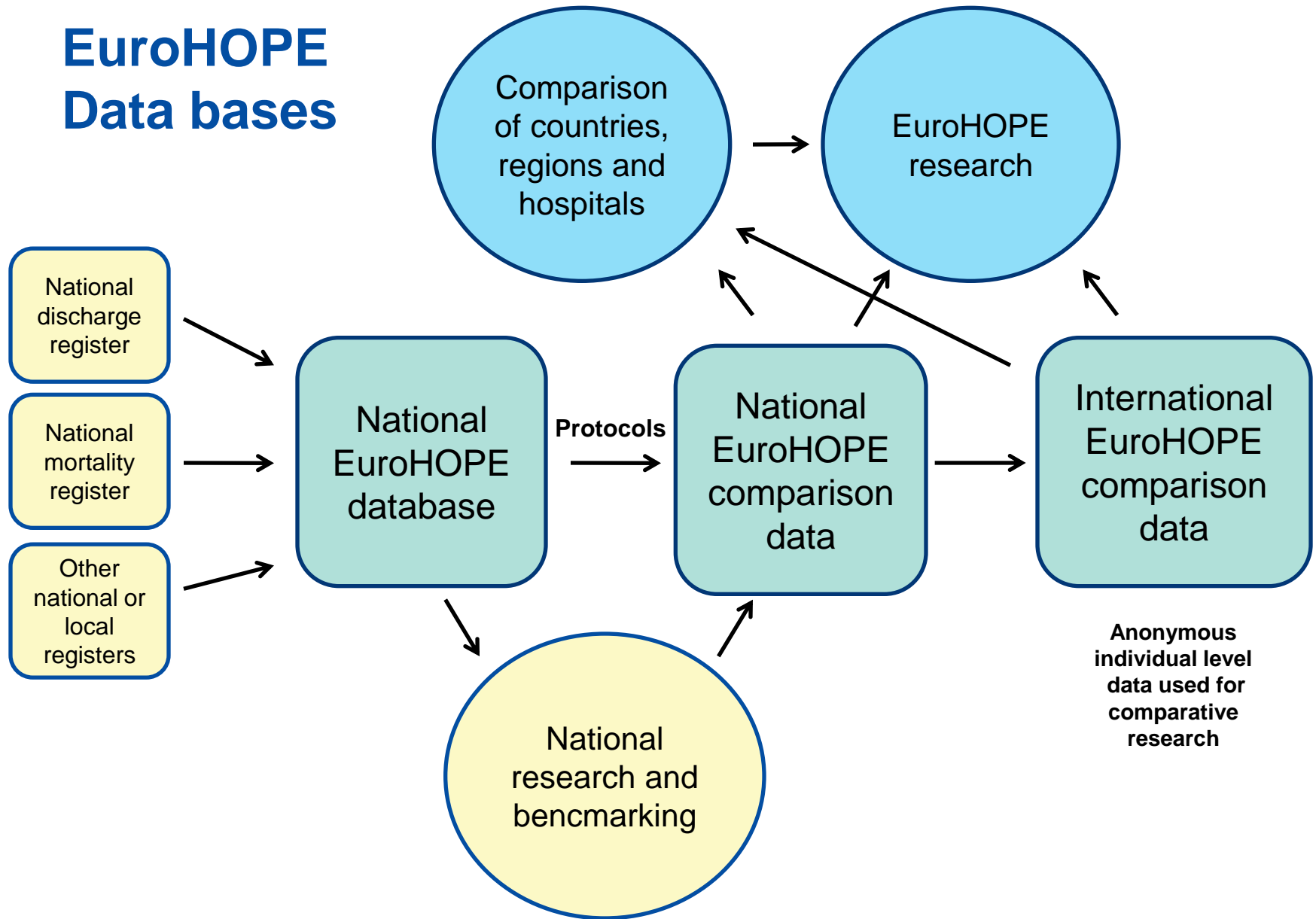
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Updating and extending the episode based performance evaluation

Further development of the research infrastructure based on register linkages: updating protocols, data processing, collecting, reporting and extending **the episode approach** to other countries and services given in primary care and social care (including long term care)

- National and regional level indicators (AMI/ACS, stroke and hip fracture) covering the years 2006/2009-2014 were calculated from Finland, Denmark, Hungary, Italy, Norway and Sweden available (<http://www.eurohope.info/>)
- The extension to include primary health care and social services in a pilot study using data from four metropolitan areas: Copenhagen, Helsinki, Oslo and Stockholm

EuroHOPE Data bases



Aims



- Extend the disease-based performance analysis to include new indicators that better describe patient care pathways at different levels of care
- Describe and compare performance of care given in the four metropolitan areas
- Evaluate how additional data (primary health care and social services, better risk adjustment and new outcome measures) change the rankings of performance between the areas and discuss their usefulness for better understanding the reasons behind performance difference
- Describe the trends in performance between the metropolitan areas.

Pilot study

- Linking of hospital, cause-of-death registers, data on prescribed medicines to the registers of primary and long-term care
- Data from Helsinki area 2009-2014, Copenhagen 2014, Oslo 2009-2012/14 and Stockholm 2009-2014
- AMI/ACS, ischemic stroke, hip fracture

Examples of performance measures

- The descriptive analysis using state diagram by calculating the proportions of patients in each state at each given day in time before and after onset of a disease

Risk adjusted measures

- 30 day, 90- day and one-year mortality
- Share of patients discharged permanently to home (total) and (without help) within 90 days
- Share of patients institutionalized within 90 days and one year
- Length of first acute hospital admission and first hospital institutional episode
- Number of inpatient days in various type of care, one year
- Number of GP visits (one year)
- Number of other doctors visits (one year)
- Home care visits (one year)
- Cost during the first hospital episode and one year

Risk adjustment

- Defining the disease groups so that they are as comparable and homogeneous as possible.
- Information on risk factors from the patients records from two data sources: i) primary or secondary diagnoses recorded during hospital admissions within 365 days prior to the index admission, and ii) purchase of medications that can be linked to particular diagnoses => 12 comorbidity indicators
- Patient use of services before onset of the disease based on previous use of services: the number of days the patient has been in acute hospital care, other institutional care, and home help during 90 days before the index day

Risk adjustment based on modelling using appropriate regression (logistic, negative binomial, generalized linear models) methods.

- Not possible to pool individual level data from Copenhagen and Stockholm=>Parameter estimates for the confounding factors were estimated using the data from Helsinki area and the coefficients of each model were made available to all partners
- The data from Helsinki area and Oslo pooled =>enables to use confounding factors as such as control variables and to employ a matched study design to increase the comparability.

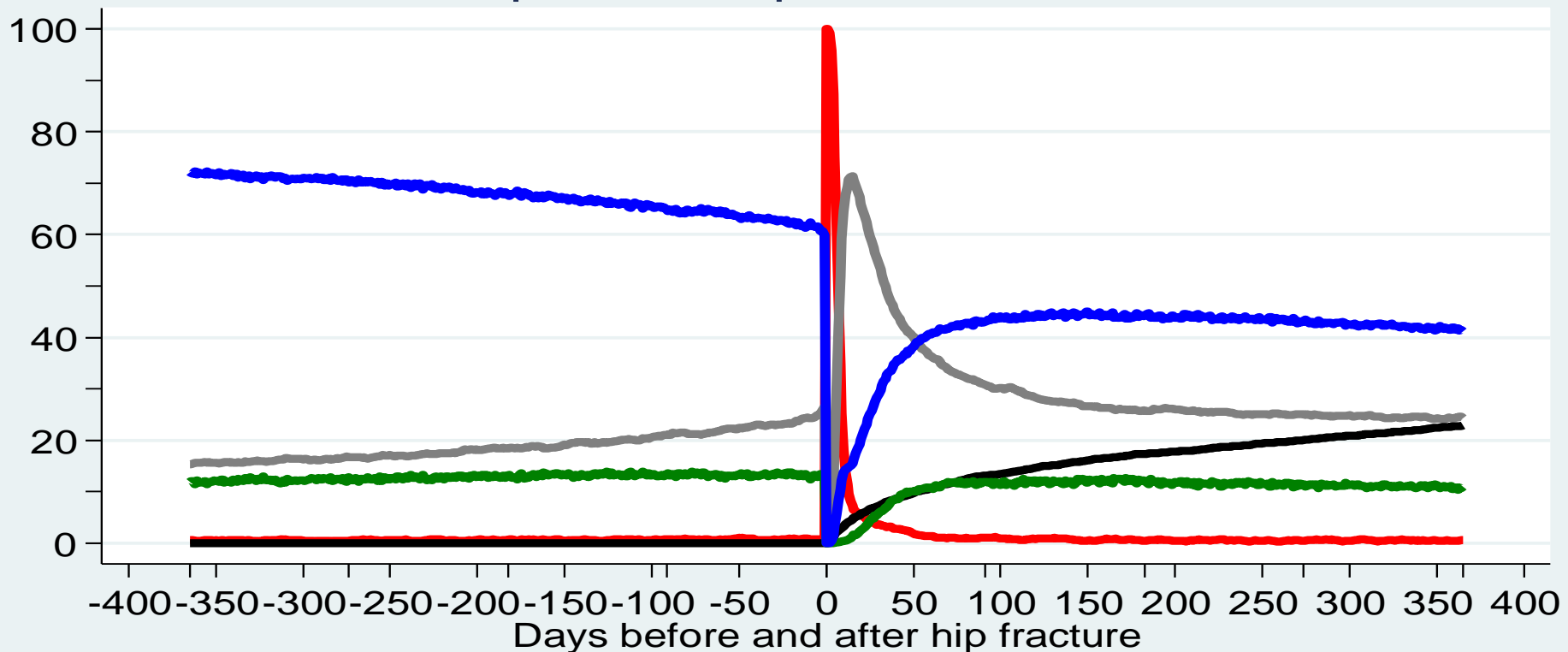
Example of results: Hip fracture patients in Helsinki area and Oslo 2009- 20012/14

Three samples:

- All hip fracture patients (Helsinki area n=4523; Oslo n=4930)
- Patients not institutionalized before hip fracture (Helsinki area n=3741; Oslo n=3923)
- Matched sample based on propensity score analyses (Helsinki area n=1731, Oslo n=1731)

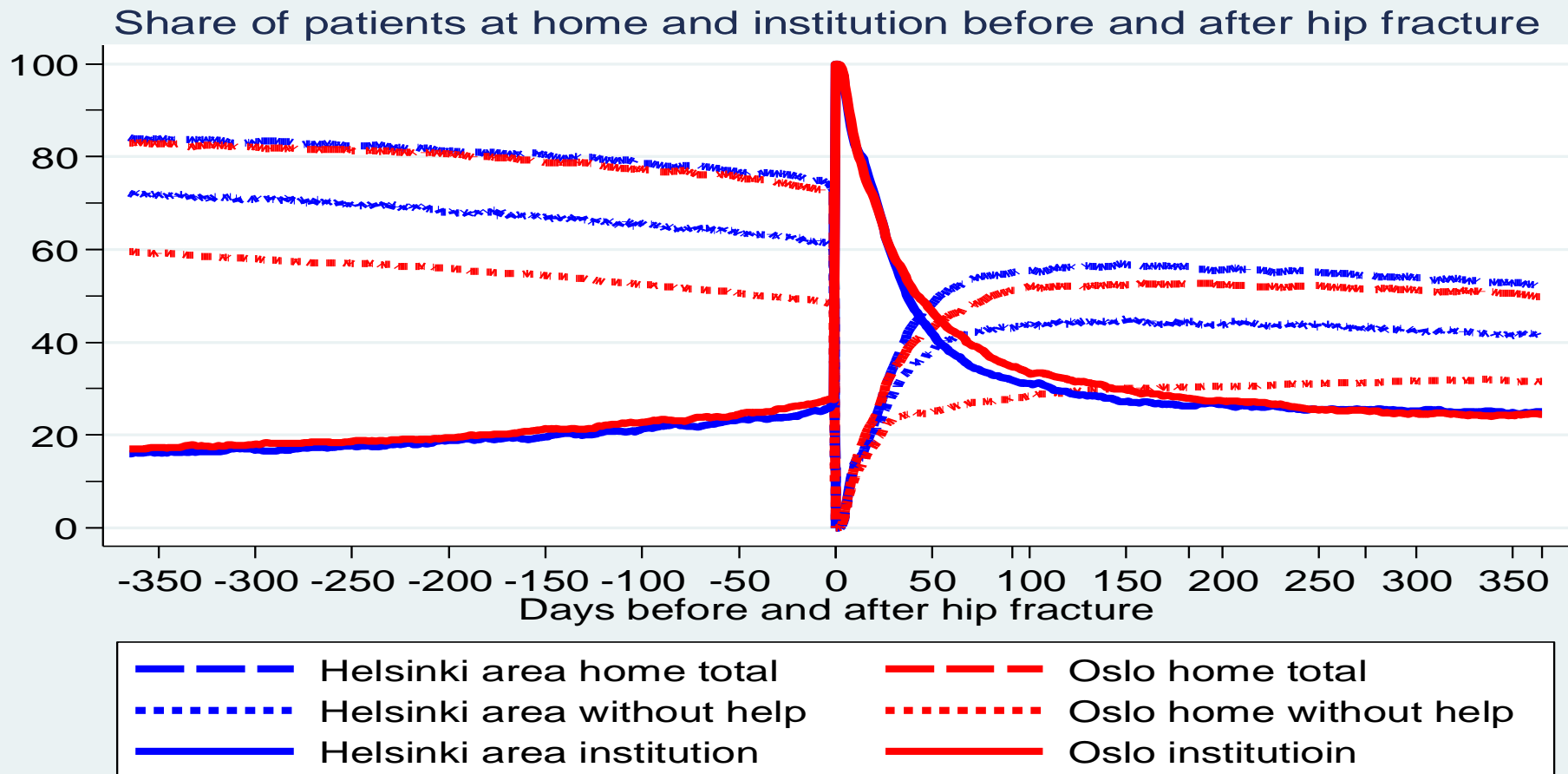
State diagram Helsinki area, all hip fracture patients

Share of hip fracture patients in different states



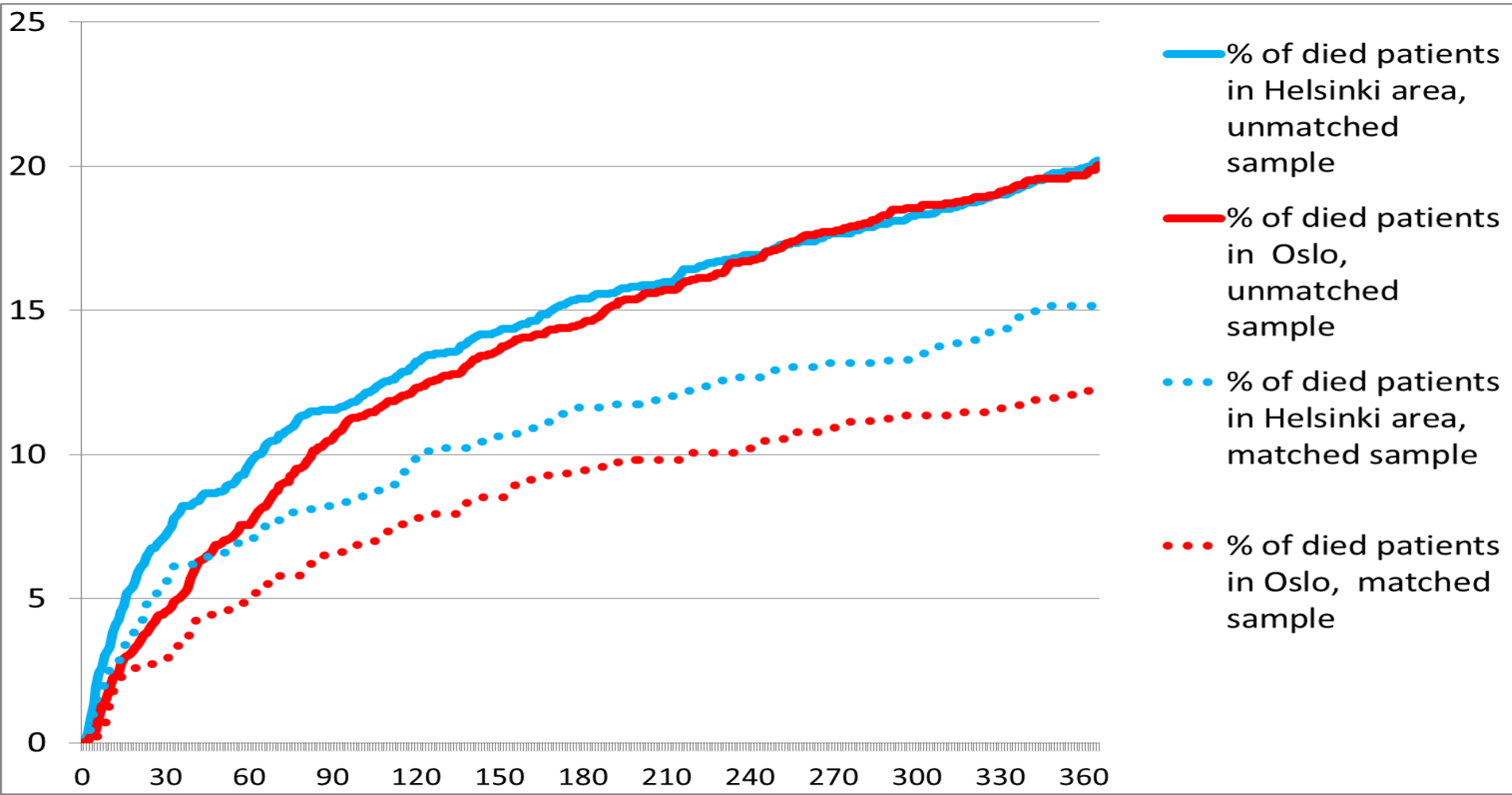
Home help more frequent in Oslo before hip fracture

State diagrams from Helsinki area and Oslo. All hip fracture patients



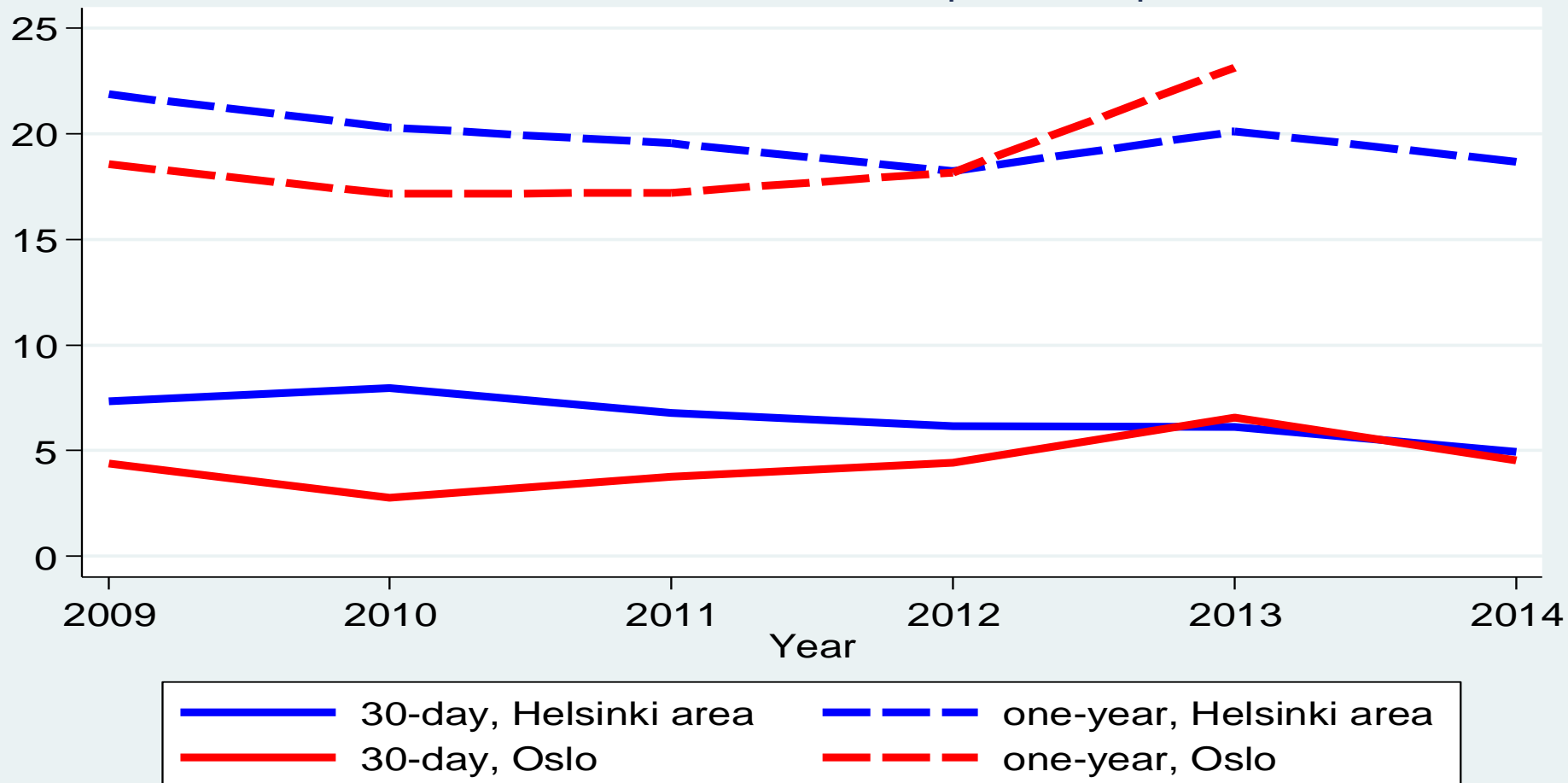
Survival figures sensitive to matching

Daily share of patients who died after hip among non institutionalised hip fracture patients



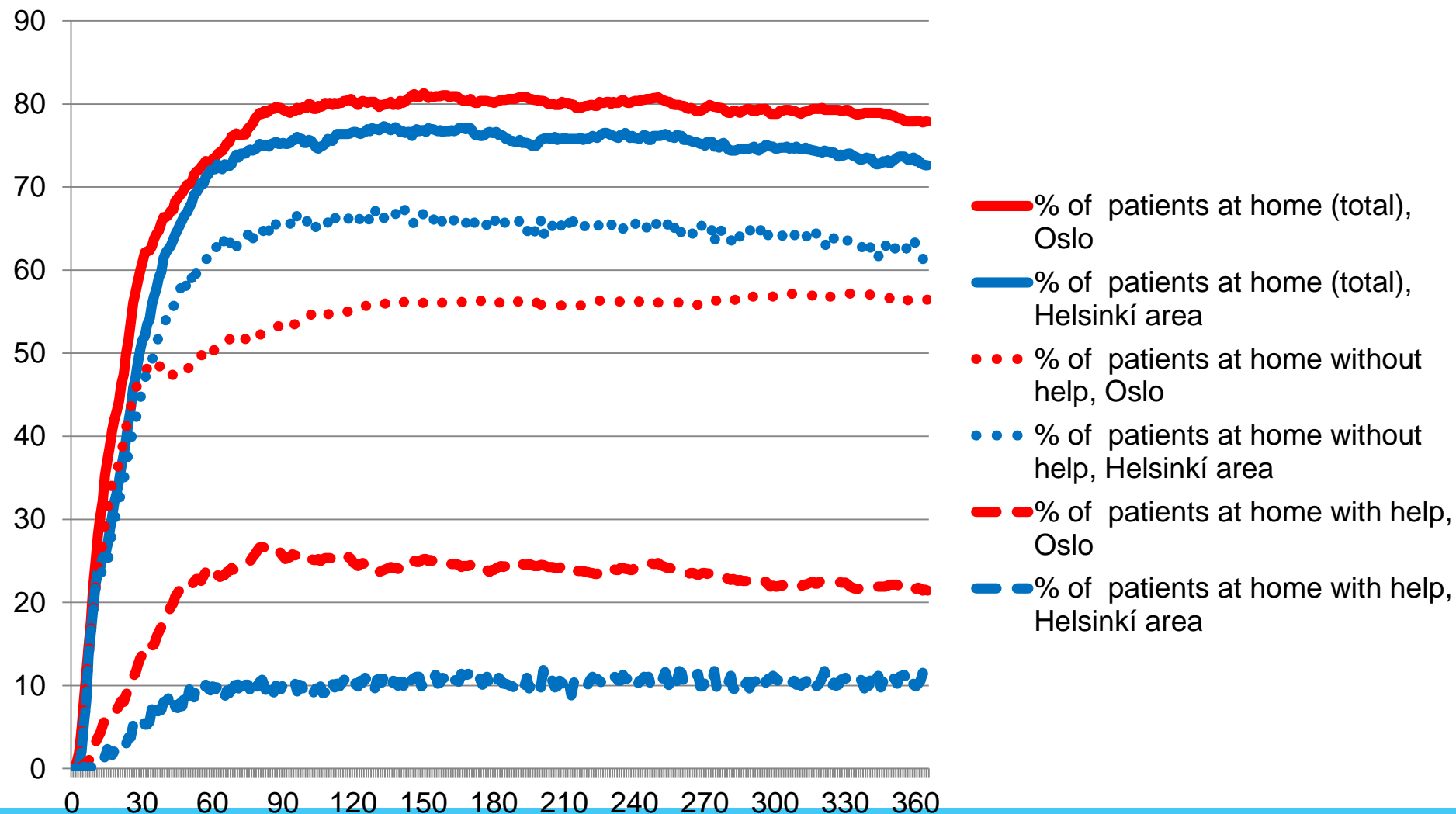
Mortality has decreased in Helsinki area but not in Oslo

Risk adjusted 30-day and one-year mortality
2009-2014, non institutionalized hip fracture patients



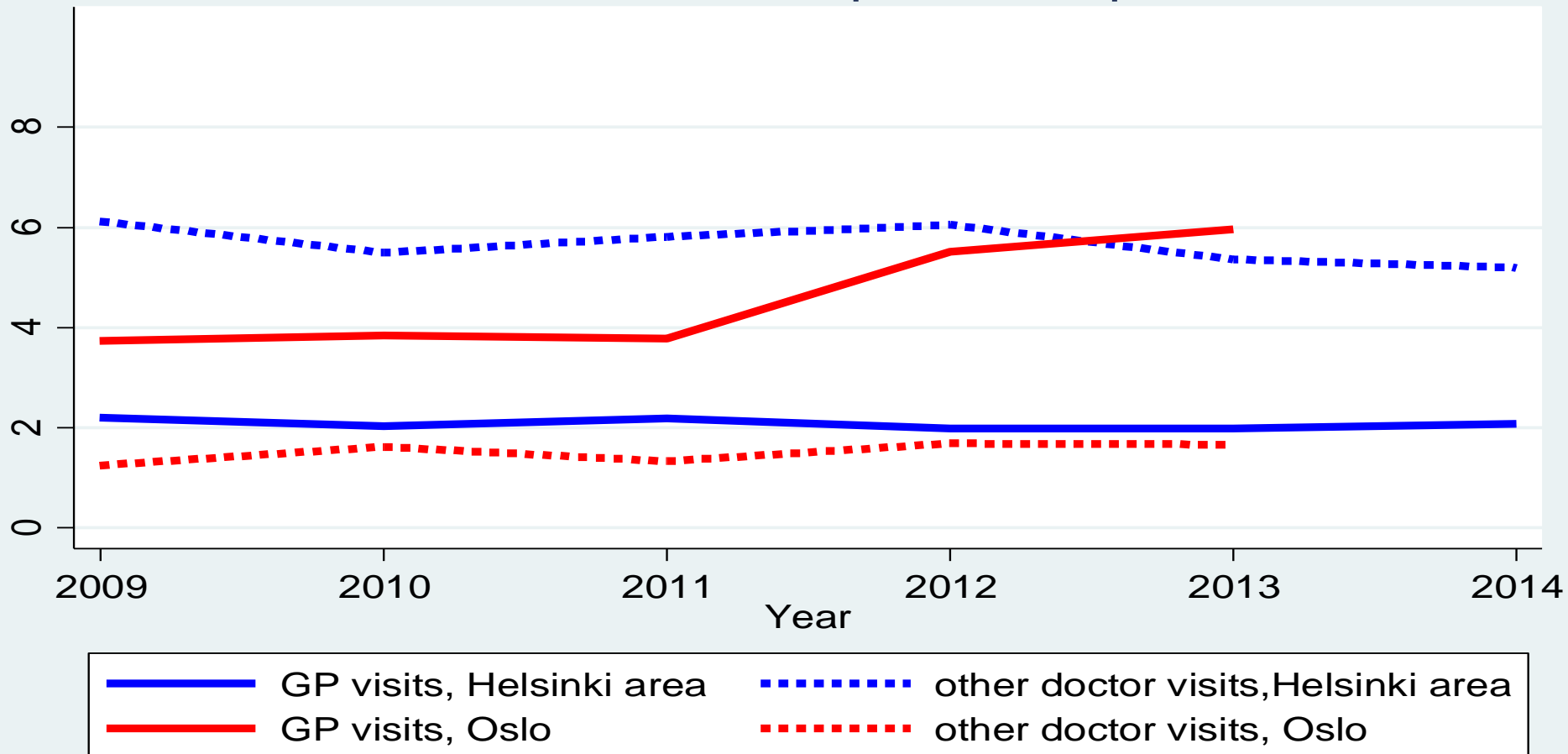
In Oslo patients discharged to home more often and received more municipal home help services

Daily share of patients in home service arrangements during one year follow-up matched sample



Annual number of GP visits per patient higher in Oslo whereas number of outpatient visits in hospitals and to specialists much higher in Helsinki

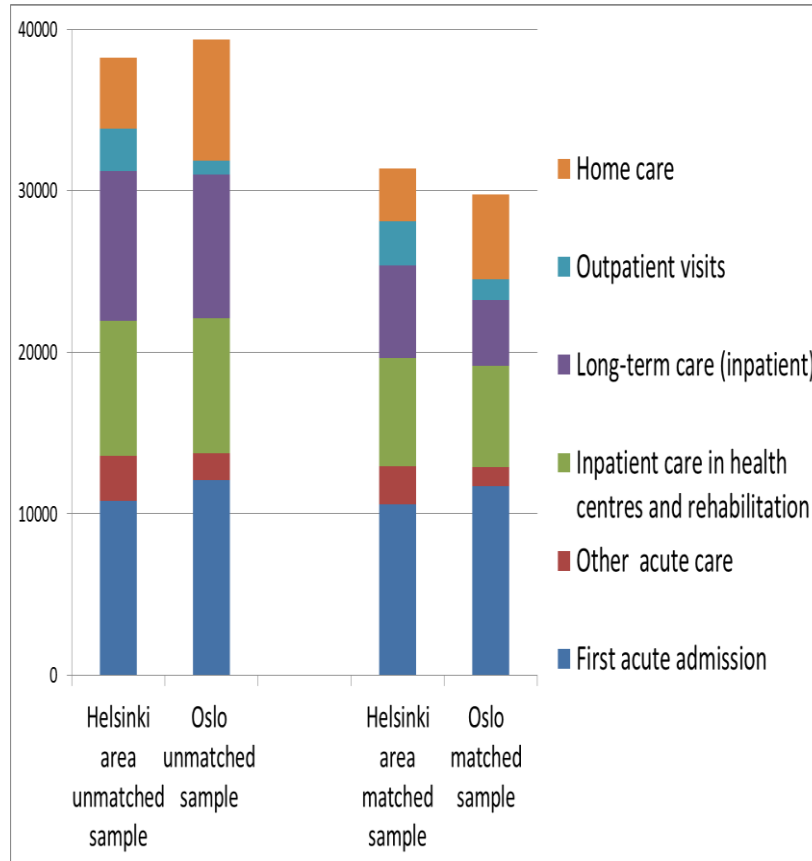
Risk adjusted visits to a doctor, one year non institutionalized hip fracture patients



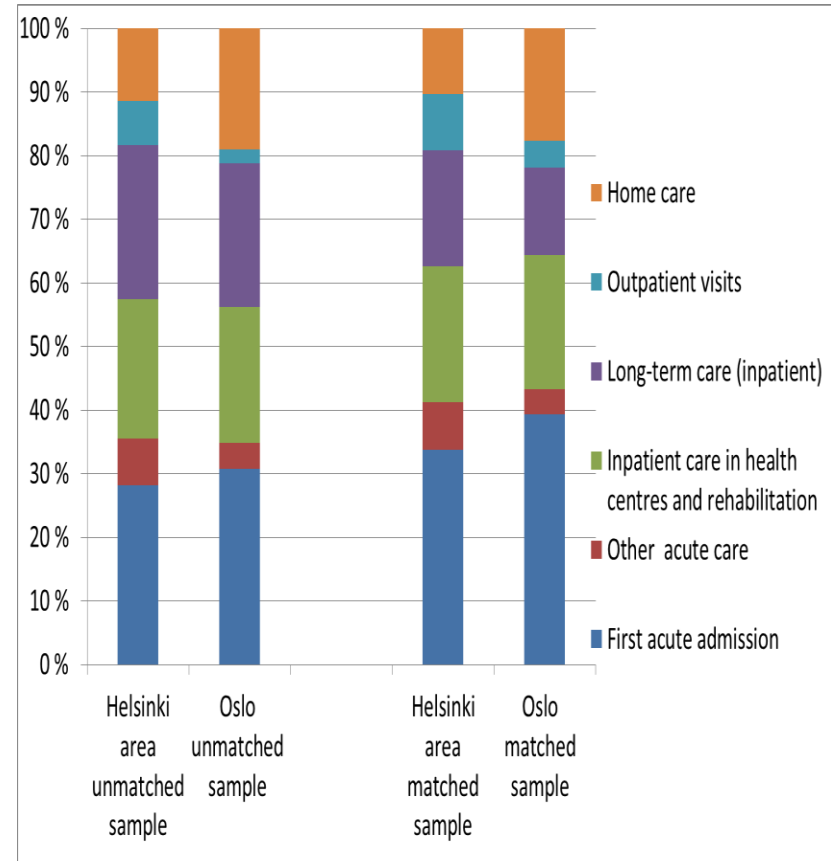
Cost estimation sensitive to matching. Structure of costs varies

One year cost of non institutionalised hip fracture patients

Per patient



Share



Conclusions

- The approach is an important extension in the field of health system performance analysis=> make possible to deepen the analysis and enrich the set of outcome as well as process indicators to be used for system performance comparison.
- Traditional risk-adjustment based on age, sex and even comorbidities is not enough for reliable performance comparison. Measures of functional ability before the onset of disease may be an important predictor of performance and should be taken in account in risk-adjustment.
- The ranking of areas were sensitive to risk-adjustment method. Previous use of different services (inpatient care, home help) as covariates in adjusted models changed the ranking between the areas
- Result indicates more developed primary health care and home help services in Norway compared to Finland. The lesser use of GP services in Helsinki was substituted with relatively more frequent use of more expensive other doctor visits such as outpatient visits to a hospital.