

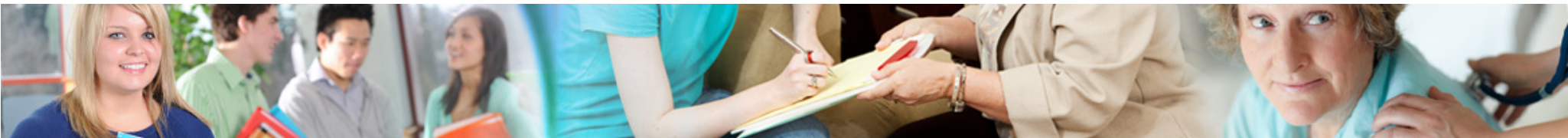
Investigating geographic and time trends for equity in healthcare

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Administrative health and social registers in Finland

- Cancers 1953
- Health care personnel 1955
- Tuberculosis care 1956
- Psychiatric care 1957
- New cases of tuberculosis 1958
- Sexually transmitted diseases 1958
- Care at general hospitals 1960
- Malformations 1963
- Occupational diseases 1964
- Adverse drug reactions 1966
- Hospital discharges 1967
- Cervical and breast cancer screenings 1968
- Causes of death 1969
- Induced abortions and sterilizations 1977
- Exposure to cancer-hazardous material 1979
- Orthopedic endoprostheses 1980
- Drug surveillance 1982
- Visual impairments 1983
- Births 1987
- Infectious diseases 1989
- Dental implants 1994
- Outpatient surgical operations 1994
- Outpatient hospital visits 1998
- Pensions 1962
- Drug reimbursements 1964
- National pensions 1970
- Survivors' pensions 1970
- Subsidies for children with disabilities 1970
- Sickness allowances 1971
- Private health care visits 1971
- Rehabilitations 1978
- Conscripts' allowance 1985
- Unemployment benefits 1985
- Social assistance 1985
- Children and adolescents taken into care 1991
- Family allowances 1993
- Child care assistances 1993
- Maternity grants 1994
- Labour market allowances 1994
- Housing allowances 1994
- Discharges from social welfare institutions 1994
- Prescriptions 1994
- Private health care operations 1996
- Financial aid for students 1997

Privacy protection and permissions to use register data in Finland

- Gathering and maintaining administrative (individual level) registers require a legal justification
- By law, all individual based register data are confidential information
- Legislation allows the use of register data (collected for administrative and statistical purposes) for scientific, historical, and statistical research purposes
- Registries include uniform personal identity numbers allowing linking within and between registers
- Strict regulations on permissions to apply, hand over and use data
- Personal consent not required if all data are obtained from registers
- The permission can usually be applied from the authority maintaining the register
- Statistical authorities usually release data only in pseudonymised form

- The Finnish privacy protection regulation and registry system
 - Research friendly
 - Allows individual level cross linkages, longitudinal follow-up and socioeconomic data
 - Provides good infrastructure for health care research
- Over 40 years of history in using registries for health research
 - no breach of privacy protection

Examples on Finnish administrative registers

- National Institute for Health and Welfare (THL):
 - Health Care Register HILMO [earlier Hospital Discharge Register]
 - Data on all inpatient hospital admissions 1967-
 - Outpatient day surgery, inpatient care at social welfare institutions (1994-)
- Statistics Finland (Tilastokeskus):
 - Longitudinal database of population censuses (1970-) and employment statistics (1990-)
 - Census: Every fifth year
 - Employment statistics: Annually
 - Data on several socioeconomic variables, such as socioeconomic position, employment, income, family position, living conditions
 - Register of causes of death 1969-
 - Based on information from death certificates

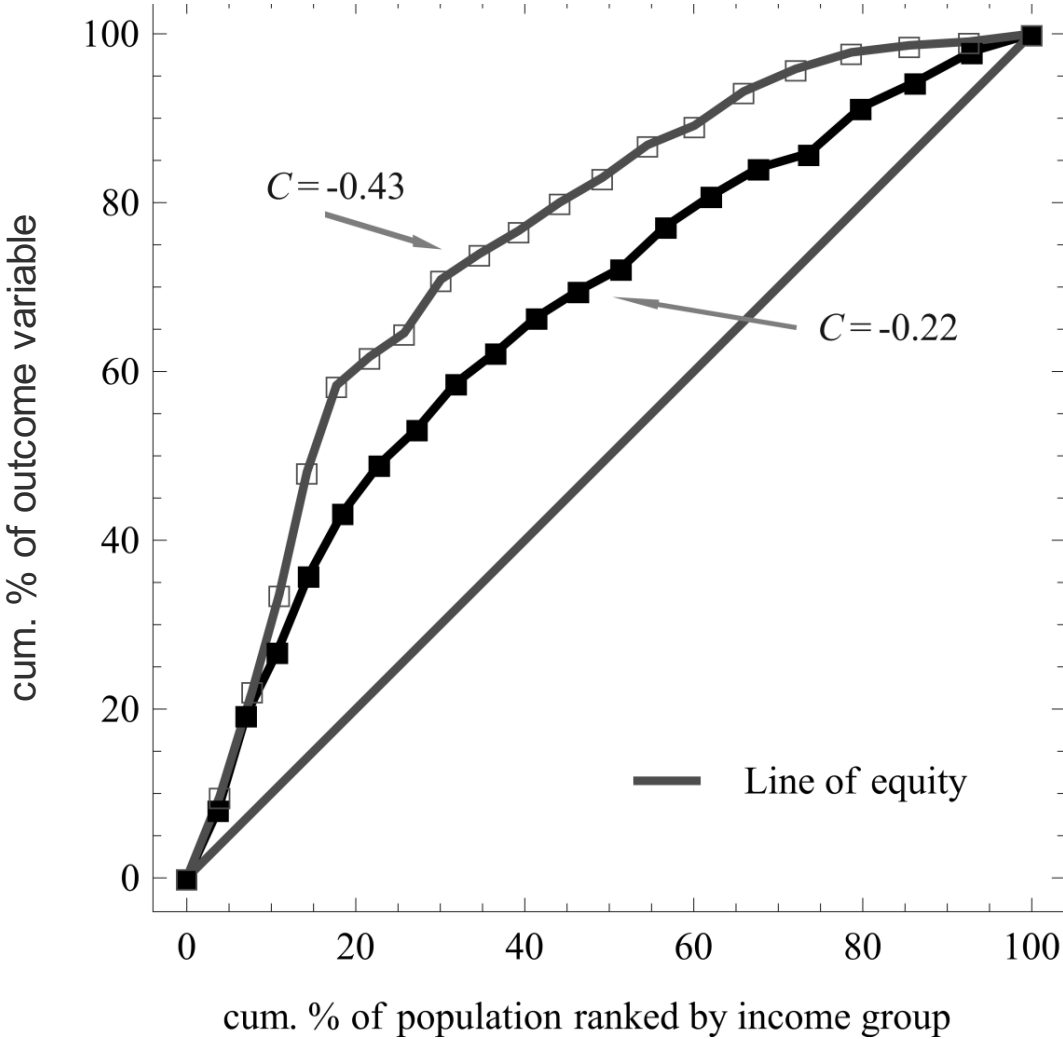


A statistical method in measuring regional variation in socioeconomic equity in healthcare

Measuring regional variation in socioeconomic equity

- Lumme et al. *Medical Care* 2008; 46: 976–983
- The Concentration index (C) as a measure of socioeconomic equity
- An inequity index based on the Gini coefficient
- The C measures relative equity

The concentration curve



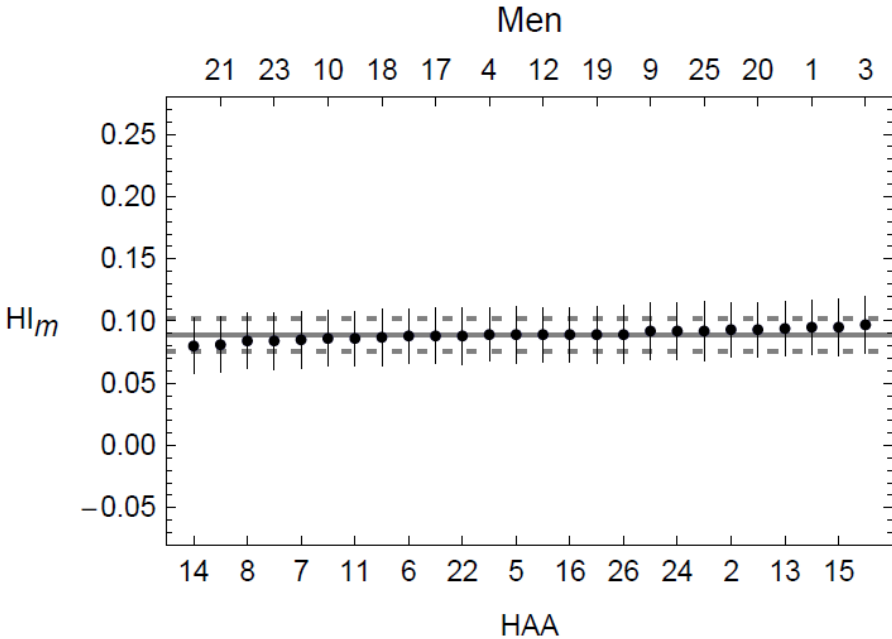
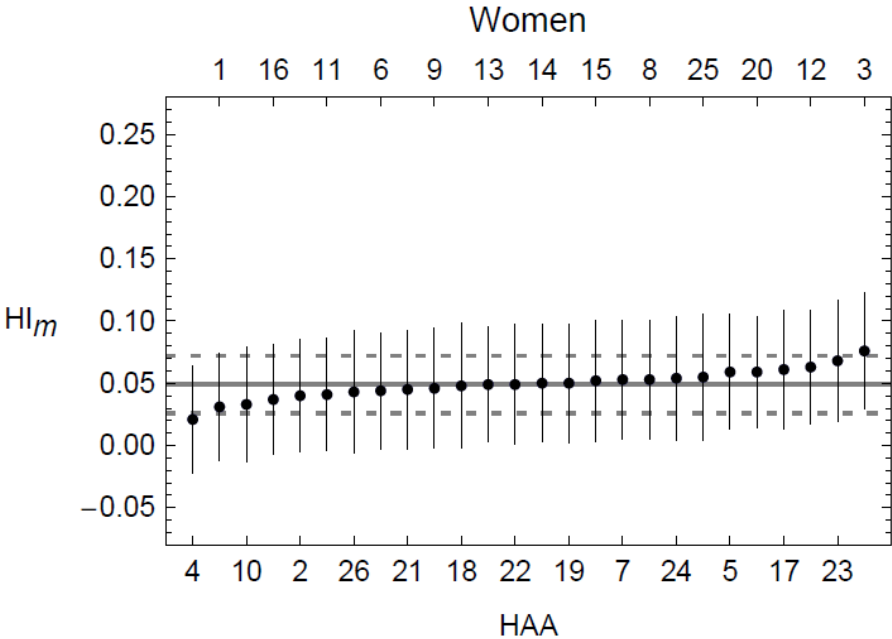
The method

- The Horizontal inequity index (HI): enables the inclusion of need in the model
- Multilevel regression modelling: the HI for different area
→ takes into account hierarchy of the data and
clustering within areas
- Takes into account the varying need for services in different population groups and areas

Empirical example: The use of coronary revascularisations

- PTCAs and CABGs among the non-institutionalised Finnish population aged 45–84 in 2001–2003
- Data on revascularisations were obtained from the FCR and linked to sociodemographic data
- Disposable family income as a socioeconomic indicator (20 groups)
- Revascularisations in 26 regions based on the administrative division of the Finnish hospital care system (HAA)
- Coronary heart disease incidence and CHD mortality was used as a proxy for need

Regional variation in socioeconomic equity in revascularisations in 2001-2003

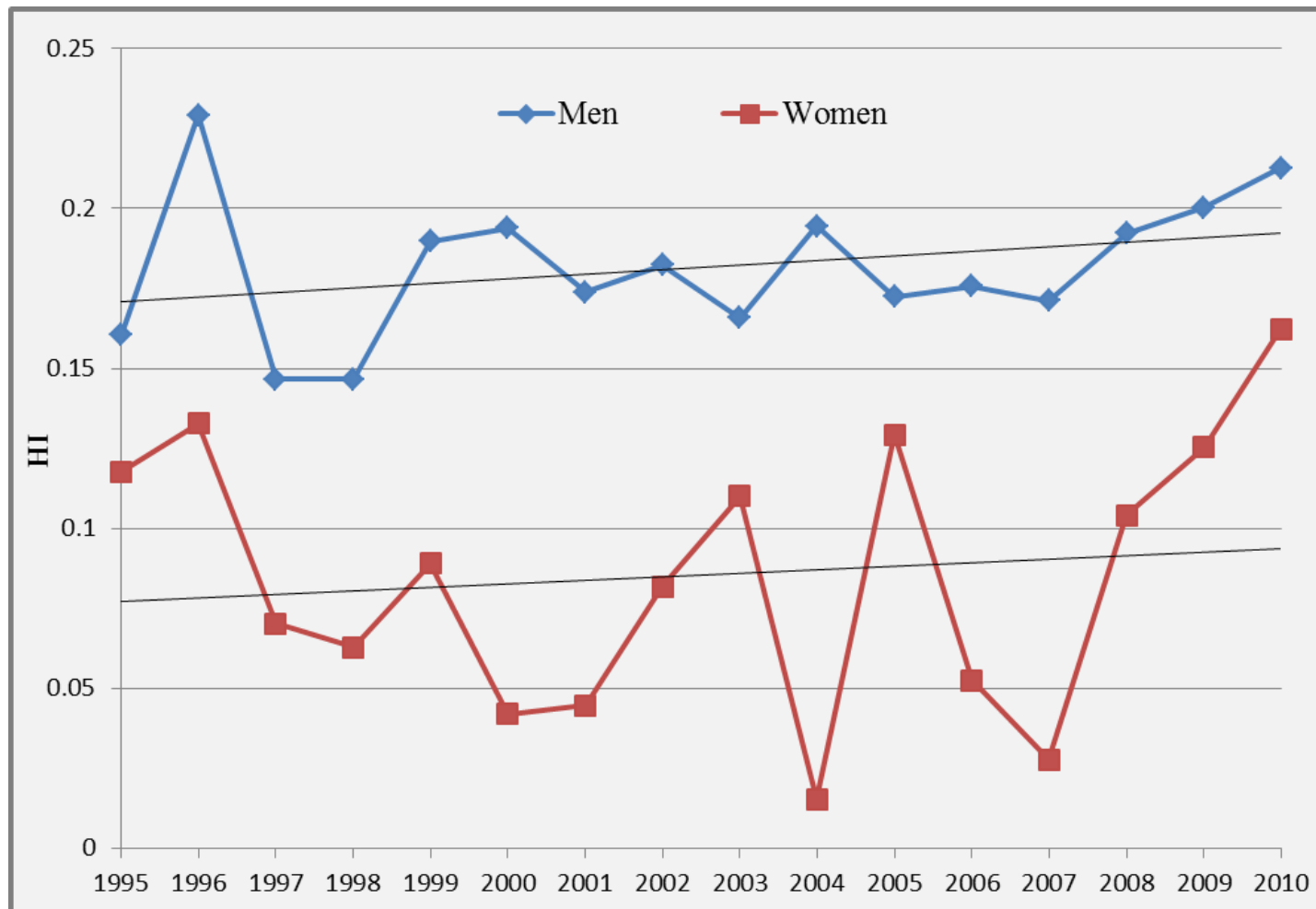


Changes in regional variation in socioeconomic equity in healthcare

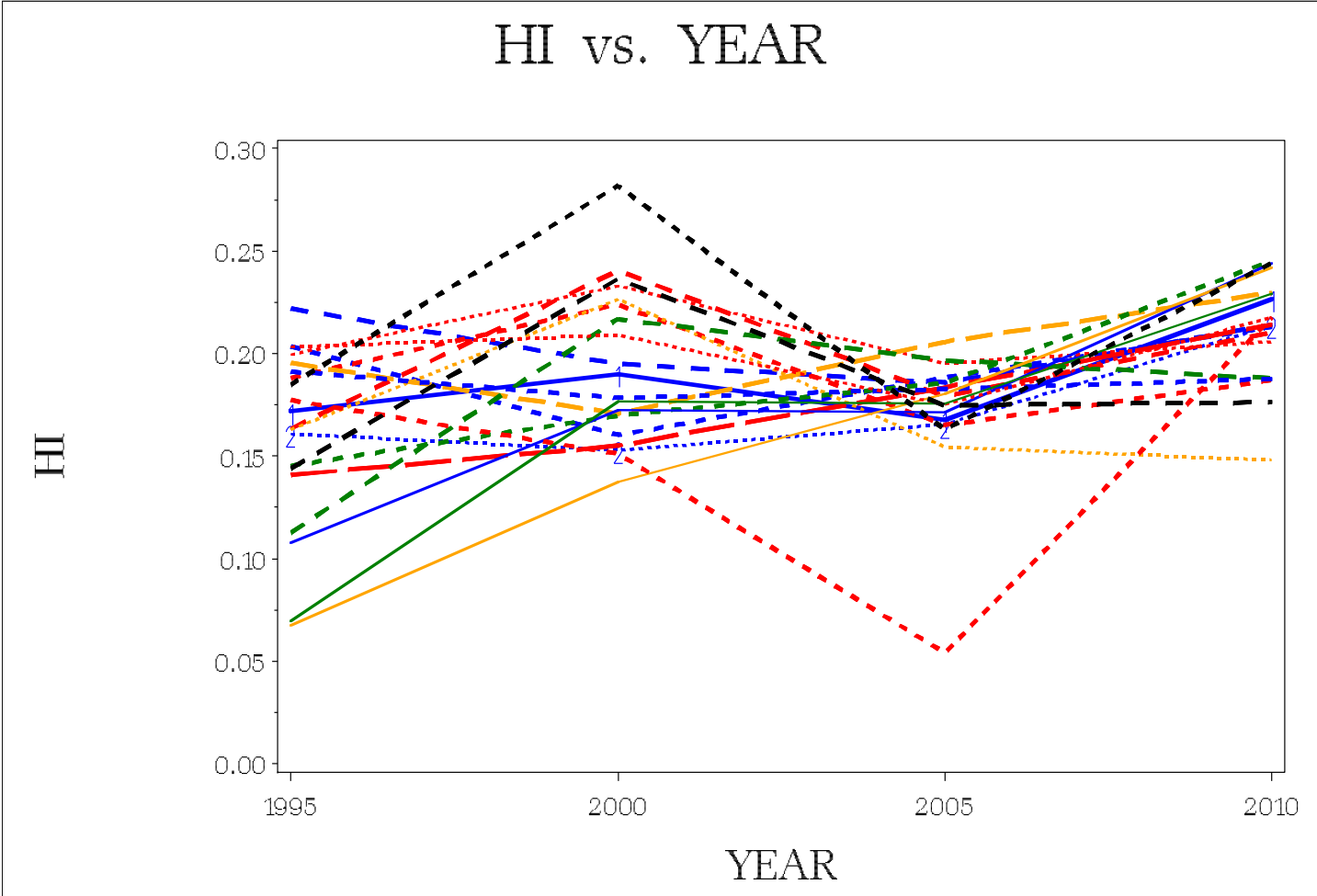
Changes in regional variation in socioeconomic equity in the use of revascularisations

- Register data on CABGs and PTCAs among the non-institutionalized Finnish population aged 45–84 in 1995–2010
- Revascularisations in 20 regions (HAA)
- Family income (20 groups)
- CHD mortality was used as a proxy for need
- Multilevel modelling method

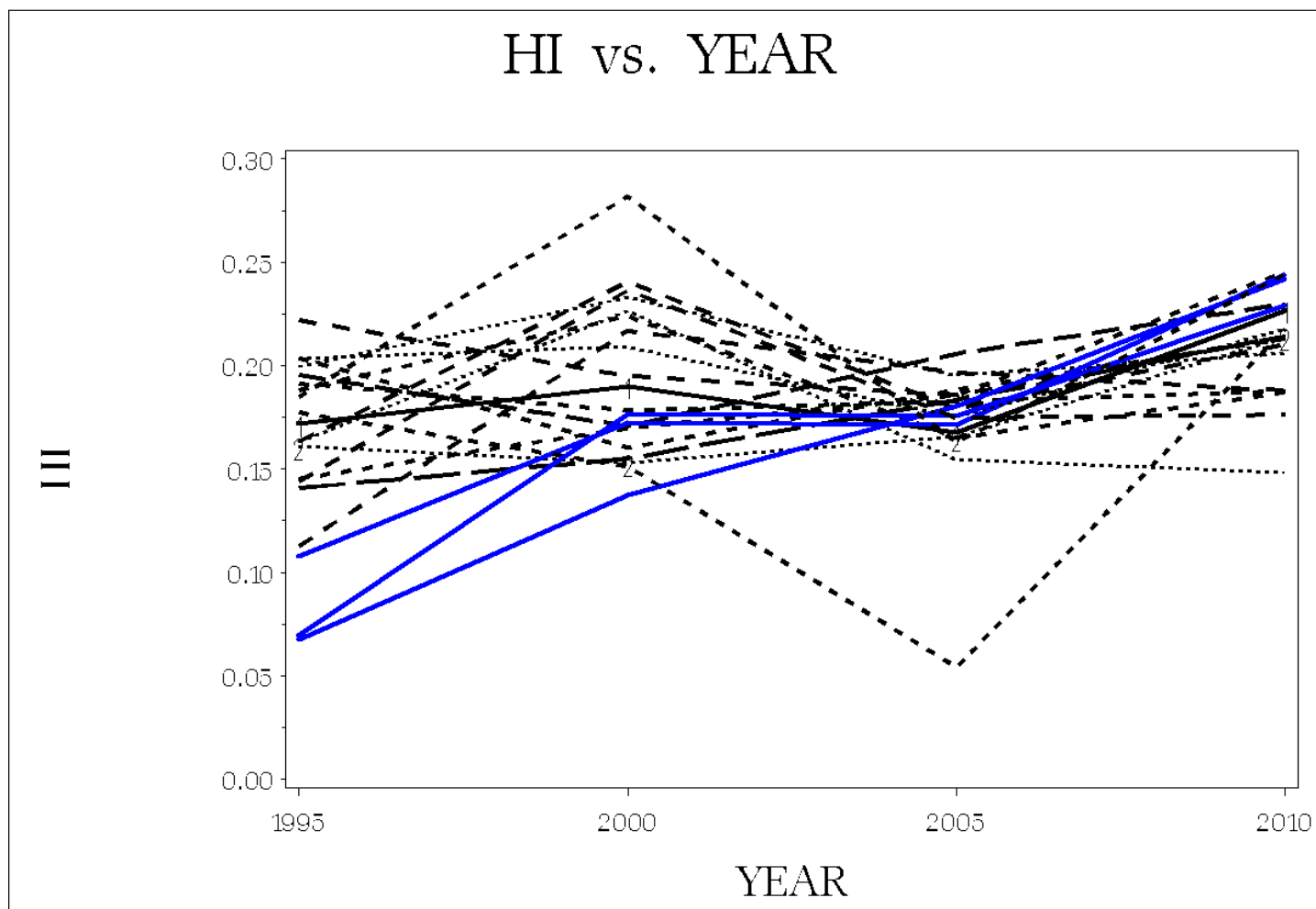
Horizontal inequity index (HI) for revascularisations in 1995-2010 estimated using the multilevel method – HI for the whole country



HI for revascularisations for areas in 1995-2010 among men



Trajectory analysis of inequity in revascularisations in 1995-2010 among men



Conclusions

- Register data provide good premises for comprehensive regional studies on equity
- Individual level socioeconomic indicator gives more detailed information on regional differences in equity
- The presented multilevel method allows studying several factors at the same time
- Trajectory analyses and studying patterns in time
- Allows studying contextual factors



Thank you for your attention