EU State of Health

EU Risk Factors

EU Inequalities

Inequalities in non-communicable diseases across the European Union (EU-28): current state and trends from 2000 to 2019
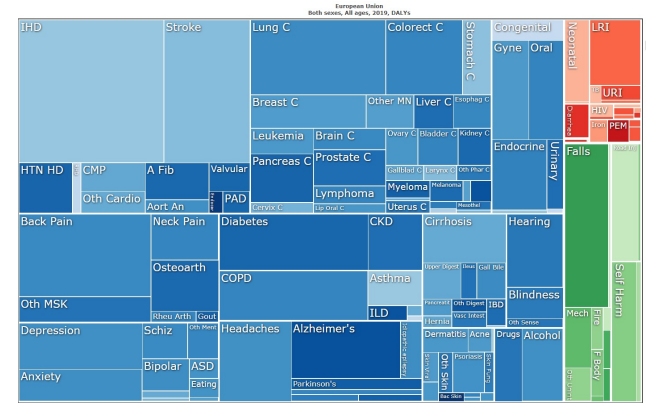
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EPHC 20211110

Introduction

- NCDs and their risk factors represent a major burden on the economy and the health of the EU

- Variations in the burden of NCDs across EU exist, driven by several factors including differences across

  - Geography

  - Demographics

  - Socioeconomic status

  - Risk factors

  - Urban-rural […]

- Potential source of health inequity

Introduction

- EU governance [EU Council, EU Commission, EU Parliament] encouraged Member States to act by implementing inter-sectorial interventions focused on risk factors, disease prevention, and healthy aging

- By accessible digital tools tailored to specific groups, and exchange of good practices between Member States, including equitable access to health services, and have funded various types of activities focusing on in-depth exploration of inequalities among vulnerable populations or technical support for public policies.

- These actions, together with active surveillance of risk factors and NCDs, sustained preventive measures, as well as investments in national and local research initiatives should help in decreasing the burden of inequalities and NCDs.

Research question

- What is the burden of inequalities related to NCDs in the EU?
    - EU member states [geography]
    - EU Economies [SES]
- Has the disparity [inequality] gap narrowed in EU during the last 20 years?

Methods > Data sources

■ GBD 1990-2019

   ■ BoD measures [age-standardized rates x 100,000]

      ■ Prevalence

      ■ Mortality

      ■ DALY

   ■ SDI [Socio-Demographic Index]

■ World Bank 1990-2019

   ■ Countries population

   ■ Countries GDP [Gross Domestic Product]

■ All NCDs

■ Neoplasms
   ■ *Lung cancer*

■ Cardiovascular diseases
   ■ *Ischemic heart disease*
   ■ *Stroke*

■ Chronic respiratory diseases
   ■ *COPD*

■ Digestive diseases
   ■ *Cirrhosis and other liver diseases*

■ Neurological diseases
   ■ *Alzheimers and dementias*

■ Mental diseases

■ Substance use

■ Diabetes and kidney diseases
   ■ *Diabetes*

■ Skin and subcutaneous diseases

■ Sense organ diseases

■ Musculoskeletal diseases
   ■ *Osteoarthritis*

■ Other

Methods > Inequality stratifiers and metrics

- Recommended by WHO, as relevant for studies within the EU.
    - Country: Across EU (28) [27+UK, <2019]
    - Gender
    - Socio-economic strata:
        - SDI [Socio-Demographic Index]
            - Geometric mean of 0 to 1 indices of : total fertility (under 25 yo), mean education (over 15 yo), and income per capita.
            - As a composite, a country with an SDI of 0 would have a theoretical minimum level of development relevant to health, while a country with an SDI of 1 would have a theoretical maximum level.
        - GDP [Gross Domestic Product]

Methods > Statistics

■ Complementary metrics including

■ Simple indices based on the absolute and relative difference between dichotomous strata and/or extremes groups

■ Population-weighted indices namely,

■ Population-attributable fractions (PAF)

■ Slope index of inequality (SII)

■ Relative index of inequalities (RII)

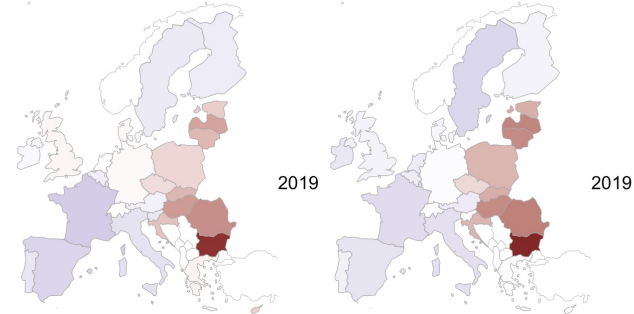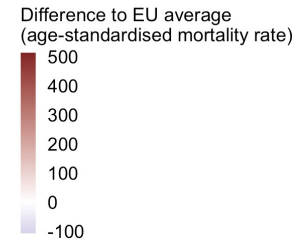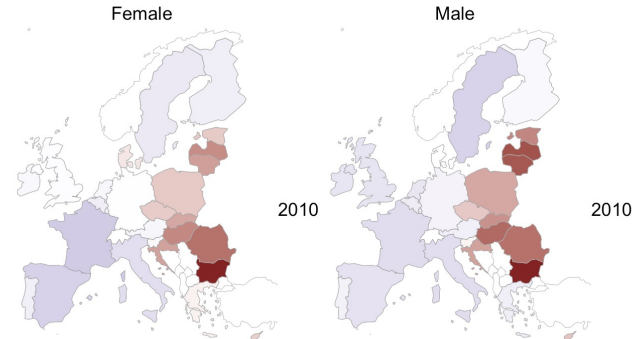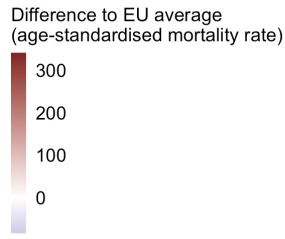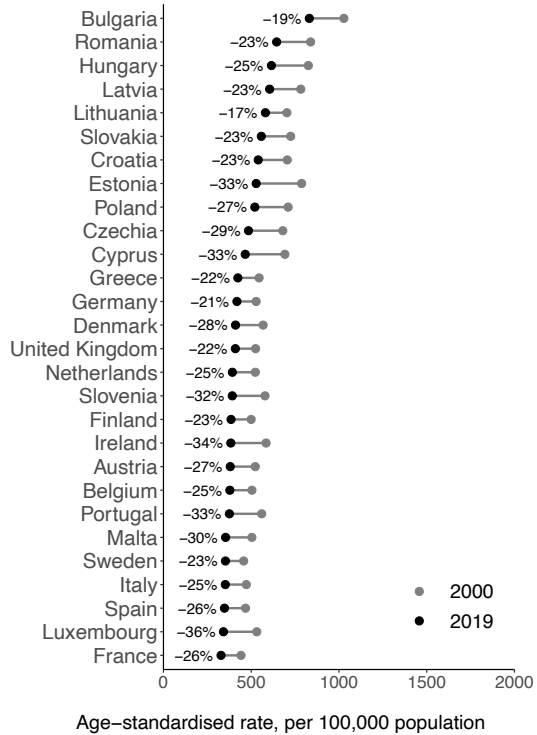| Difference	SII
Ratio	RII

Methods > Statistics

■ Population-weighted indices:

  ■ RII

    ■ Quantifies the gradient in disease rates on a relative scale

    ■ Regression-based

      ■ Disease outcomes against the relative position of the countries on the distribution (represented by the midpoint of its range in the cumulative population distribution "ridit")

      ■ Multiplicative quasi-Poisson regression model; the exponentiated regression coefficient of the "ridit" was interpreted as the RII with corresponding 95% CIs.

      ■ 1 = no inequality; the further away from 1, the higher the inequality
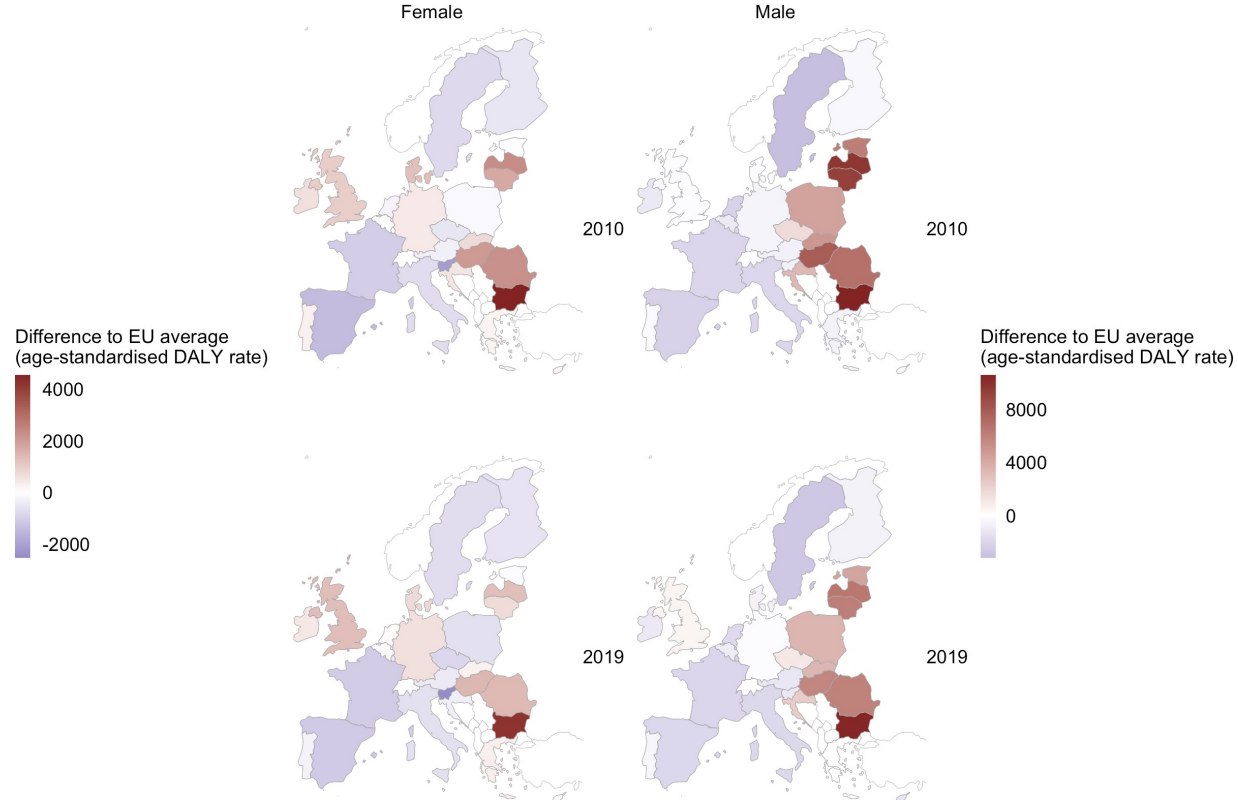
Results > Mortality

Age–standardised rate, per 100,000 population

Results > Mortality

Geographical differences NCD burden in mortality rates (per 100,000) in EU-28

Value	2000	2005	2010	2015	2019	p-trend
Max	1028 (Bulgaria)	962 (Bulgaria)	886 (Bulgaria)	837 (Bulgaria)	831 (Bulgaria)	
Average EU	548 (EU)	499 (EU)	453 (EU)	426 (EU)	415 (EU)	
Min	442 (France)	398 (France)	365 (France)	339 (France)	328 (France)	
RII	2.12 (1.80; 2.50)	2.30 (1.92; 2.76)	2.35 (1.97; 2.81)	2.36 (2.05; 2.71)	2.23 (1.92; 2.60)	0.293

Results > DALYs

Age−standardised rate, per 100,000 population

Country	Change
Bulgaria	−13%
Romania	−17%
Latvia	−19%
Hungary	−21%
Lithuania	−14%
Estonia	−25%
Slovakia	−18%
Poland	−19%
United Kingdom	−13%
Croatia	−18%
Germany	−12%
Greece	−10%
Denmark	−18%
Czechia	−19%
Ireland	−20%
Portugal	−19%
Cyprus	−19%
Belgium	−13%
Finland	−13%
Austria	−16%
Netherlands	−16%
Malta	−15%
Italy	−15%
Luxembourg	−20%
France	−14%
Spain	−14%
Sweden	−12%
Slovenia	−23%

2000
2019

Female

Male

2010

2010

2019

2019

Difference to EU average
(age-standardised DALY rate)

4000
2000
0
−2000

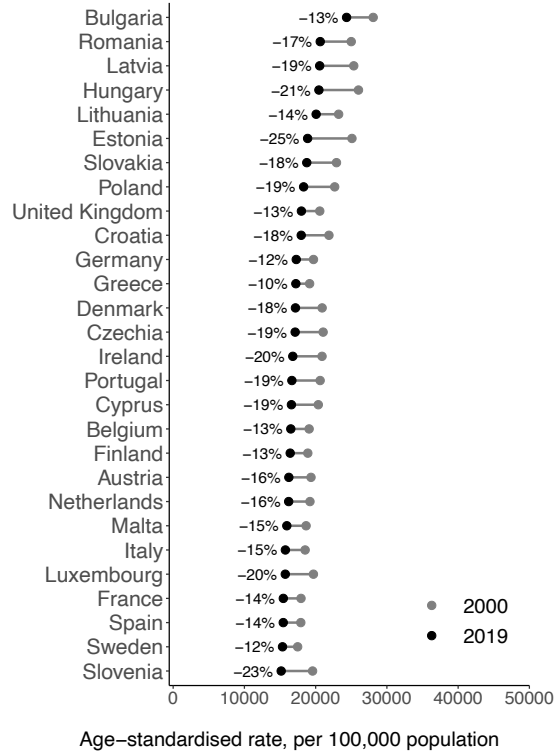Difference to EU average
(age-standardised DALY rate)

8000
4000
0

Results > DALYs

Geographical differences NCD burden in DALYs rates (per 100,000) in EU-28

Value	2000	2005	2010	2015	2019	p-trend
Max	28076 (Bulgaria)	27023 (Bulgaria)	25435 (Bulgaria)	24451 (Bulgaria)	24342 (Bulgaria)	
Average EU	20012 (EU)	18930 (EU)	17918 (EU)	17255 (EU)	17038 (EU)	
Min	17474 (Sweden)	16661 (Sweden)	15978 (Sweden)	15398 (Slovenia)	15164 (Slovenia)	
RII	1.50 (1.40; 1.61)	1.56 (1.44; 1.70)	1.49 (1.38; 1.60)	1.44 (1.35; 1.53)	1.42 (1.33; 1.52)	≤0.001

Results > DALYs > Specific NCDs

■ Geographical differences in DALYs rates (per 100,000) in EU-28

■ Highest for IHD and stroke
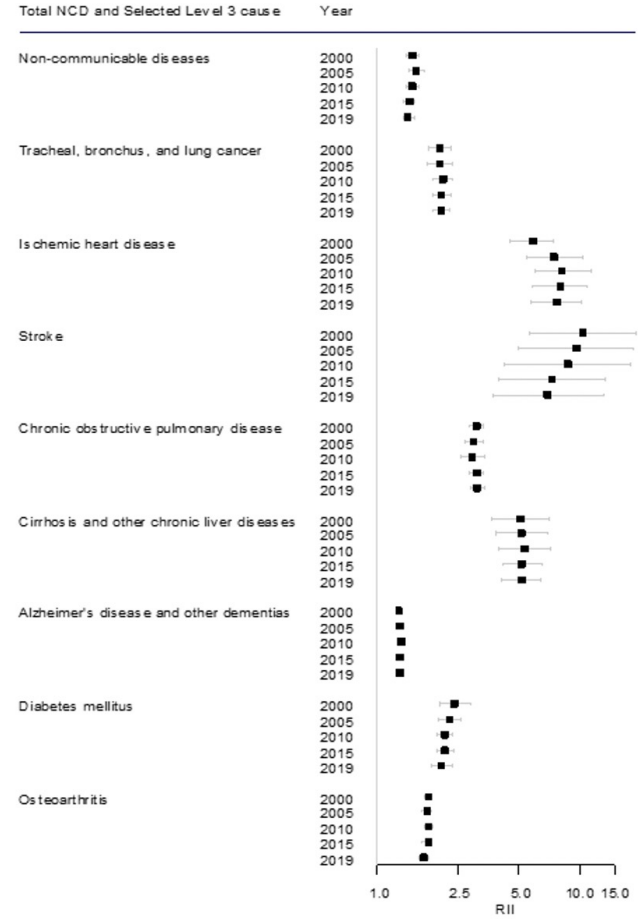
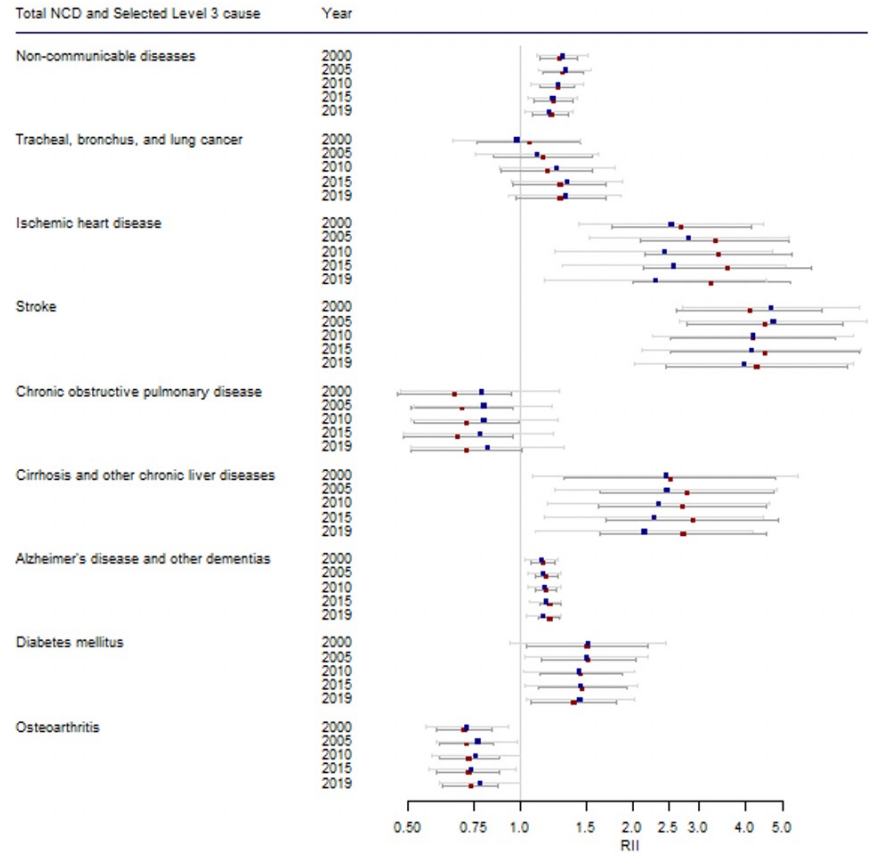# Results > SES disparities

- SES differences in DALYs rates (per 100,000) in EU-28
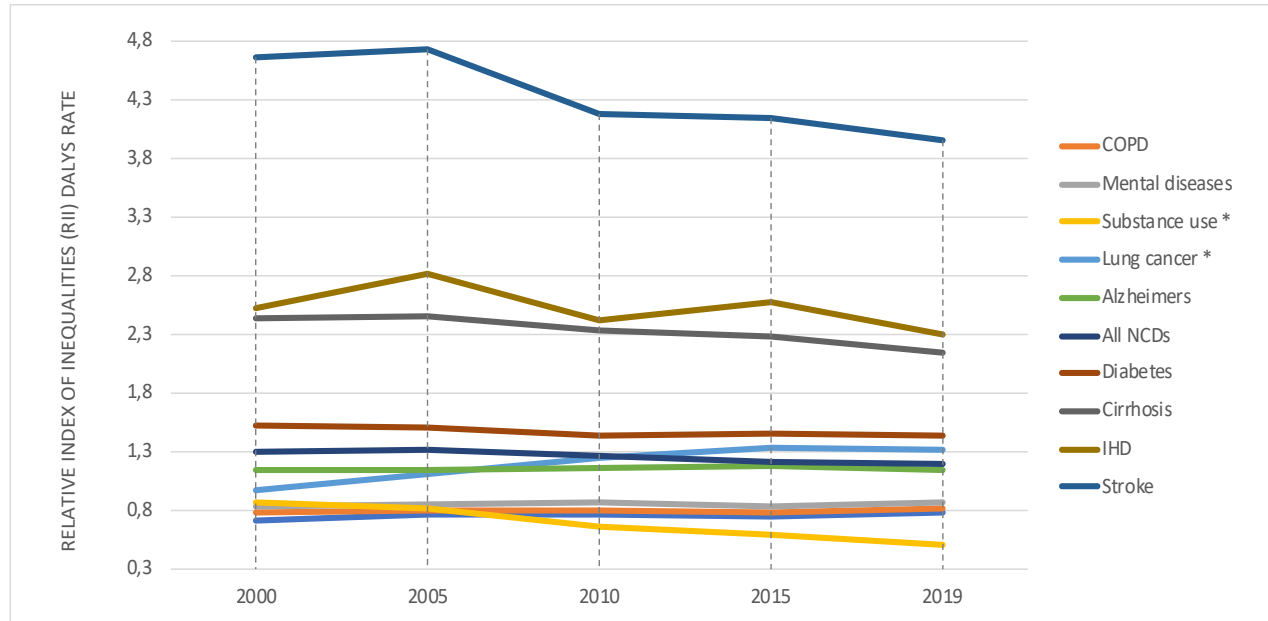
  - SDI = red
  - GDP = blue

- Similar pattern for SDI and GDP

- Highest for stroke, IHD and cirrhosis and other chronic liver disease

Results > SES disparities

Relative SES inequalities by socio-demographic index (SDI) in RII for total NCD and Selected Level 3 cause DALYs rates (per 100,000)

(Some) conclusions

◼ Since 2000, NCDs have been the <u>most prevalent diseases in the EU</u>, responsible for the majority of mortality and morbidity in the EU.

◼ Despite existing strategies to tackle NCDs and their risk factors in the EU during the last two decades, only <u>slight variations in indicators of inequalities</u> between countries are observed.

◼ While inequalities in NCDs burden are apparent, <u>the disparity gap differs depending on the metric used. It was more pronounced for mortality (60%) than for DALYs (38%)</u>

◼ <u>The burden of IHD and stroke are particularly variable across the EU, representing geographical and socio-economic disparities in accessing CVD prevention and care strategies</u>

Outlook

- Timely characterization of inequalities across the current EU-28 at an inflexion point for EU member countries, that is the years immediately preceding Brexit and the COVID-19 pandemic.

- The former is expected to continue affecting the EU economy and population, including displacement of HP between the EU countries and the UK, while the latter has adversely affected HS response across Europe, impacting the most on patients with NCDs.

- The information provided in this study will be particularly helpful to understand the magnitude of the impact of the drastic socio-economic changes driven by these events on health inequalities, that have possibly set back the ongoing efforts to tackle health inequalities, and introduce further economic stress widening the gap,

- Benchmarking for future assessments of health inequalities post-COVID.

Acknowledgment

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