Socioeconomic inequalities in caesarean section rates in Europe

Jennifer Zeitlin for Lucy Smith

Inserm, Obstetrical, Perinatal and Pediatric Epidemiology Research, France

EURO PERISTAT

BETTER STATISTICS FOR BETTER HEALTH
for pregnant women and their babies

Understanding variations in Caesarean section rates across Europe

- **Euro-Peristat network has found that caesarean birth rates differ by a factor of three from just over 15% to over 45%**
- **This variation is related to differences in maternal age and maternal co-morbidities, socio-cultural norms about mode of delivery and organisation and financing of maternity care.**
- **Benchmarking between countries has the potential to yield valuable insights**

Socioeconomic status and perinatal outcomes

- Indicators of adverse perinatal outcome – preterm birth, growth restriction and perinatal mortality – are higher in populations with lower socioeconomic status
- Multiple mechanisms : higher prevalence of co-morbidites, including obesity, higher smoking rates, psychosocial factors such as stress and less access to high-quality care
- These should also affect ceasarean section rates, but this question has not been studied on the European level

Study aim :

To investigate socioeconomic inequalities in caesarean section rates

Design:	Retrospective analysis of routinely collected data
Setting:	23 of 27 countries in the Euro-Peristat group with socioeconomic status (SES) data
Participants:	~15,000,000 births between 1/1/2015 to 31/12/2019
Outcome	Birth by Caesarean Section

EURO PERISTAT

PHIRI Population Health Information Research Infrastructure

Measuring socio-economic status

- Individual level data – 17 countries
  - Mother's education level (16 countries)
    - International Standard Classification of Education (ISCED)
      - Primary/lower secondary; Upper secondary; Post secondary
  - Mother's occupation (1 country)
    - Skilled/ unskilled workers; technicians/clerical/service occupations; Managers/professionals.
- Area level data – 6 countries
  - Socioeconomic deprivation index of mother's residence
    - 20% (lowest SES); 40% (Medium SES); 40% (Highest SES)

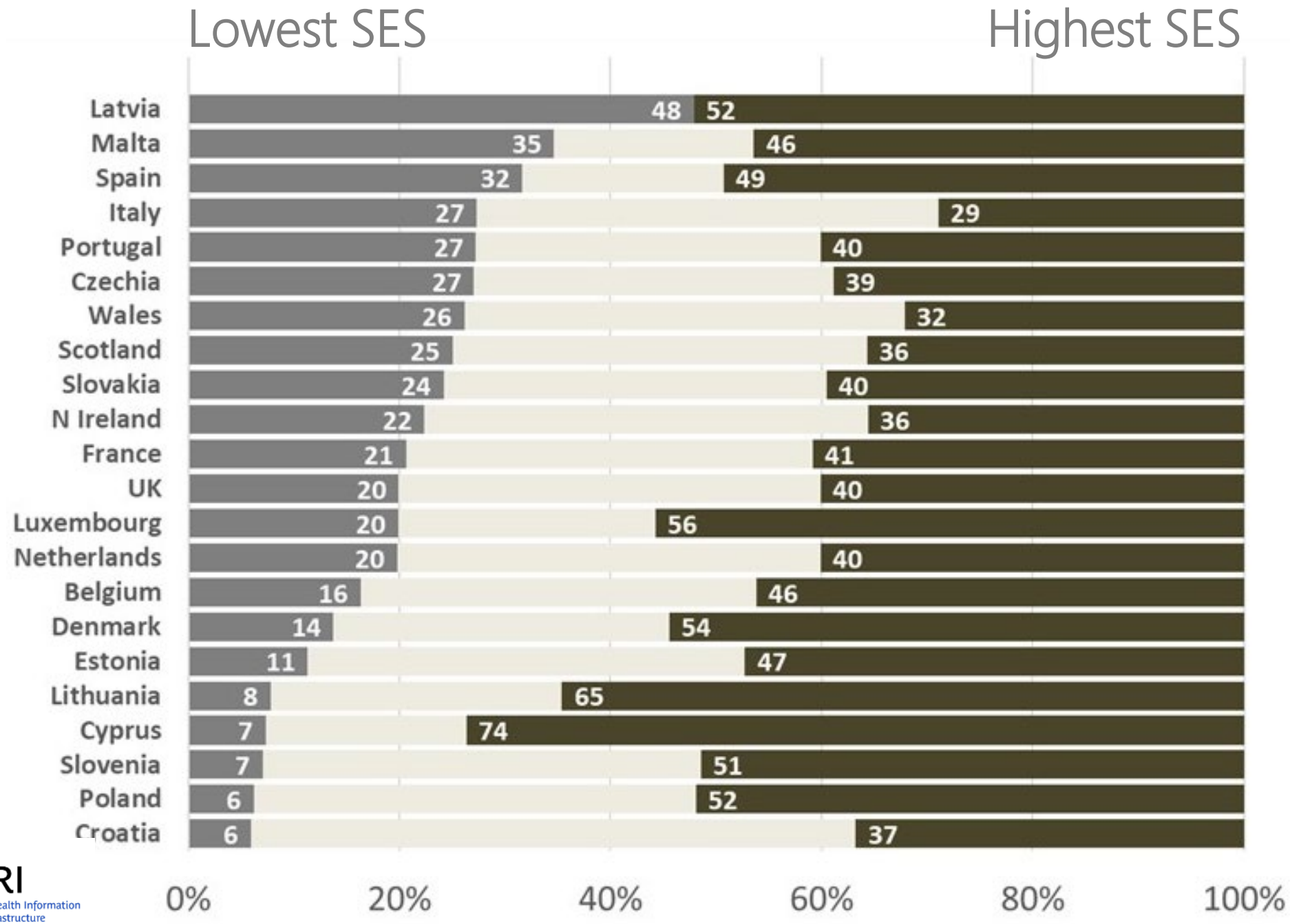
EUROPERISTAT

PHIRI Population Health Information Research Infrastructure

How does the distribution of births by SES group vary by country?

Distribution of socioeconomic status by countries

% of births by SES



EUROPERISTAT

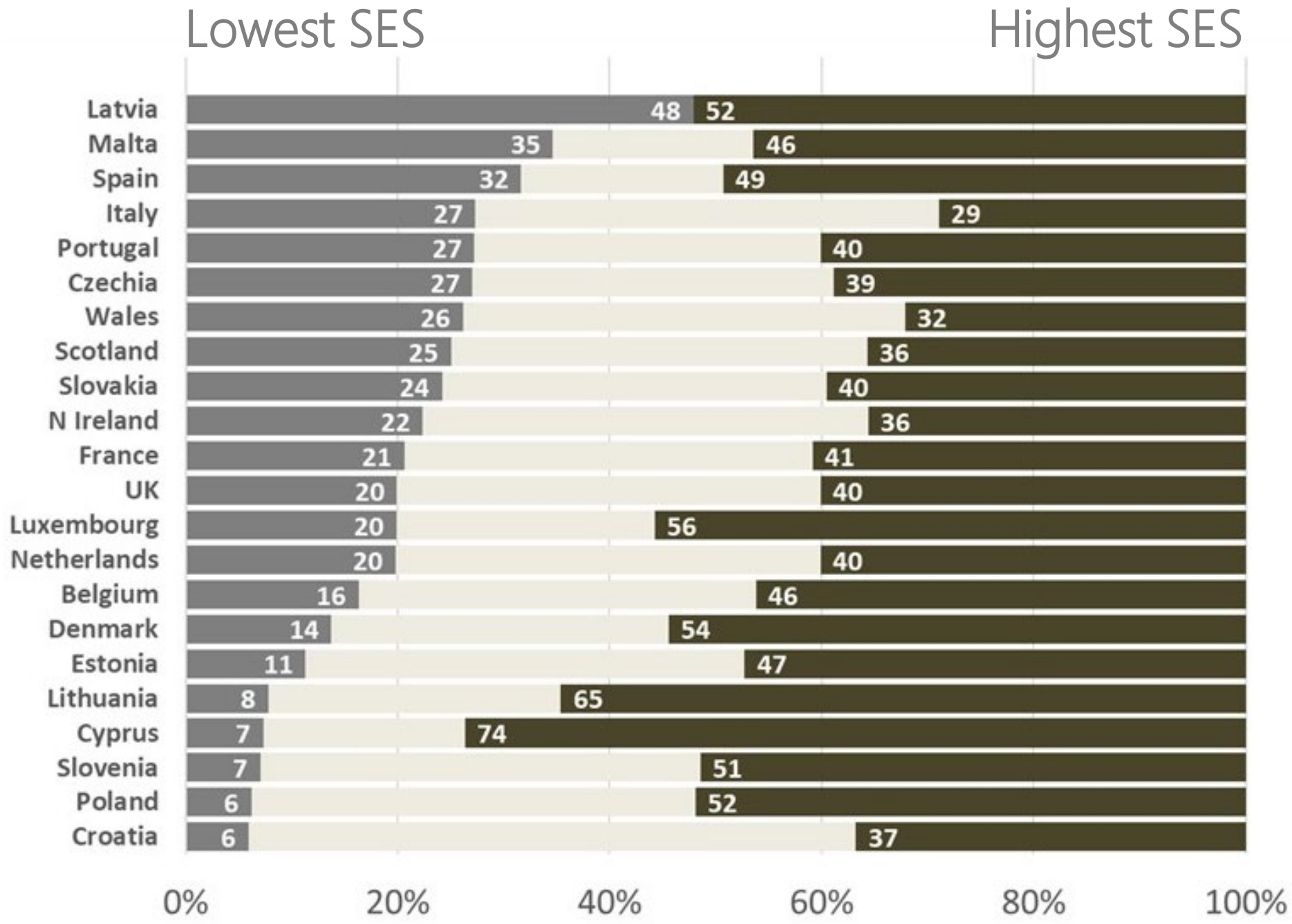
PHIRI Population Health Information Research Infrastructure

% of births by SES

6 to 48%
lowest SES

29 to 74%
highest SES

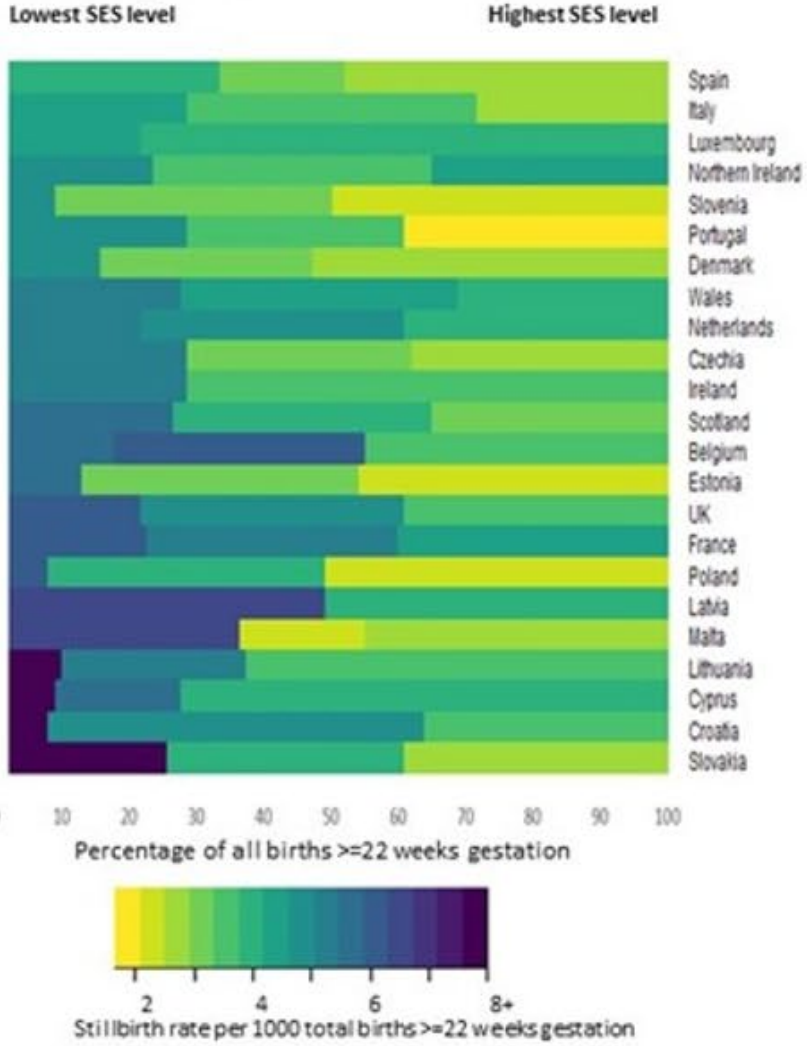
0 to 24%
missing SES



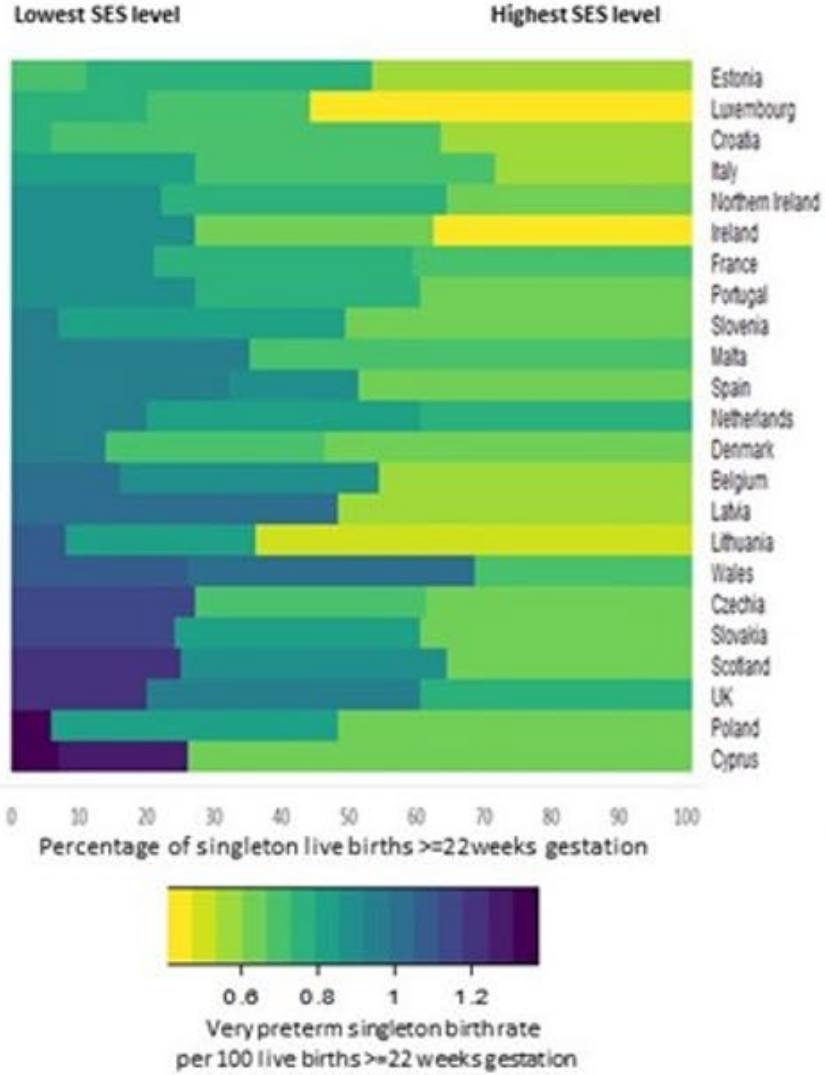
How does the rate of Caesarean Section vary by SES group in each country?

- Heat maps
- Relative risks (highest/lowest SES groups)

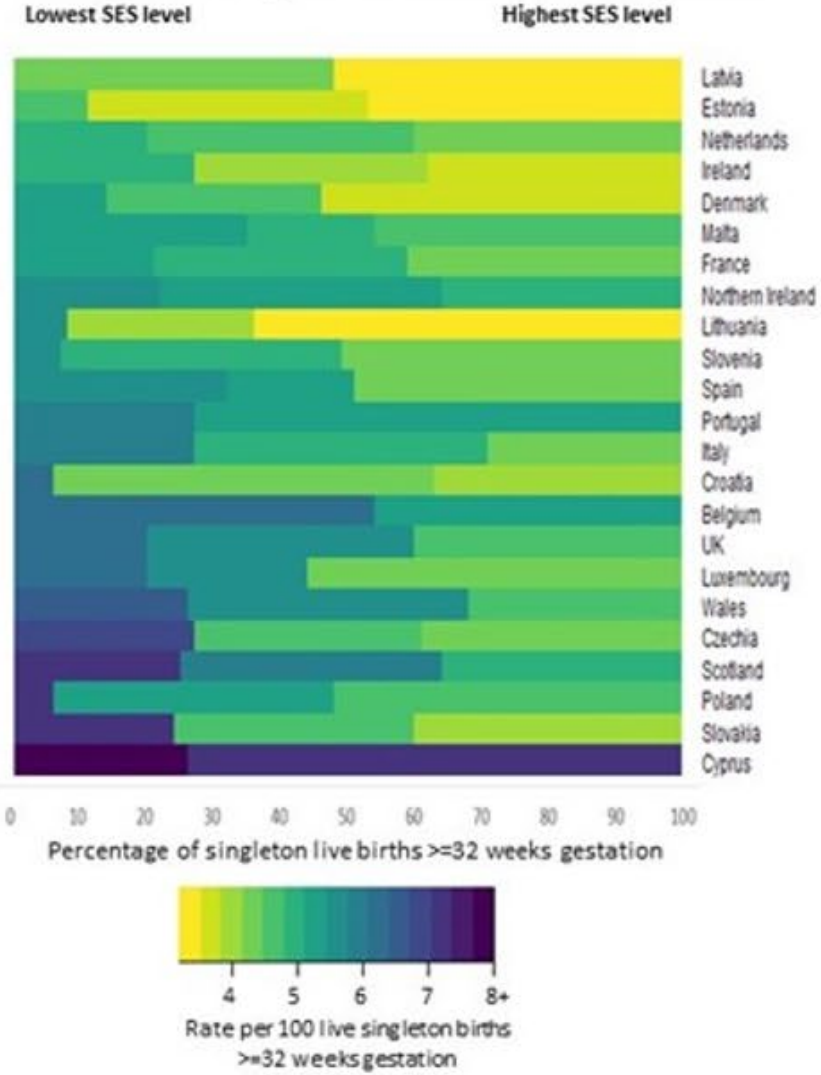
2.1 Stillbirth rates ≥22 weeks per 1000 total births >= 22 weeks gestation

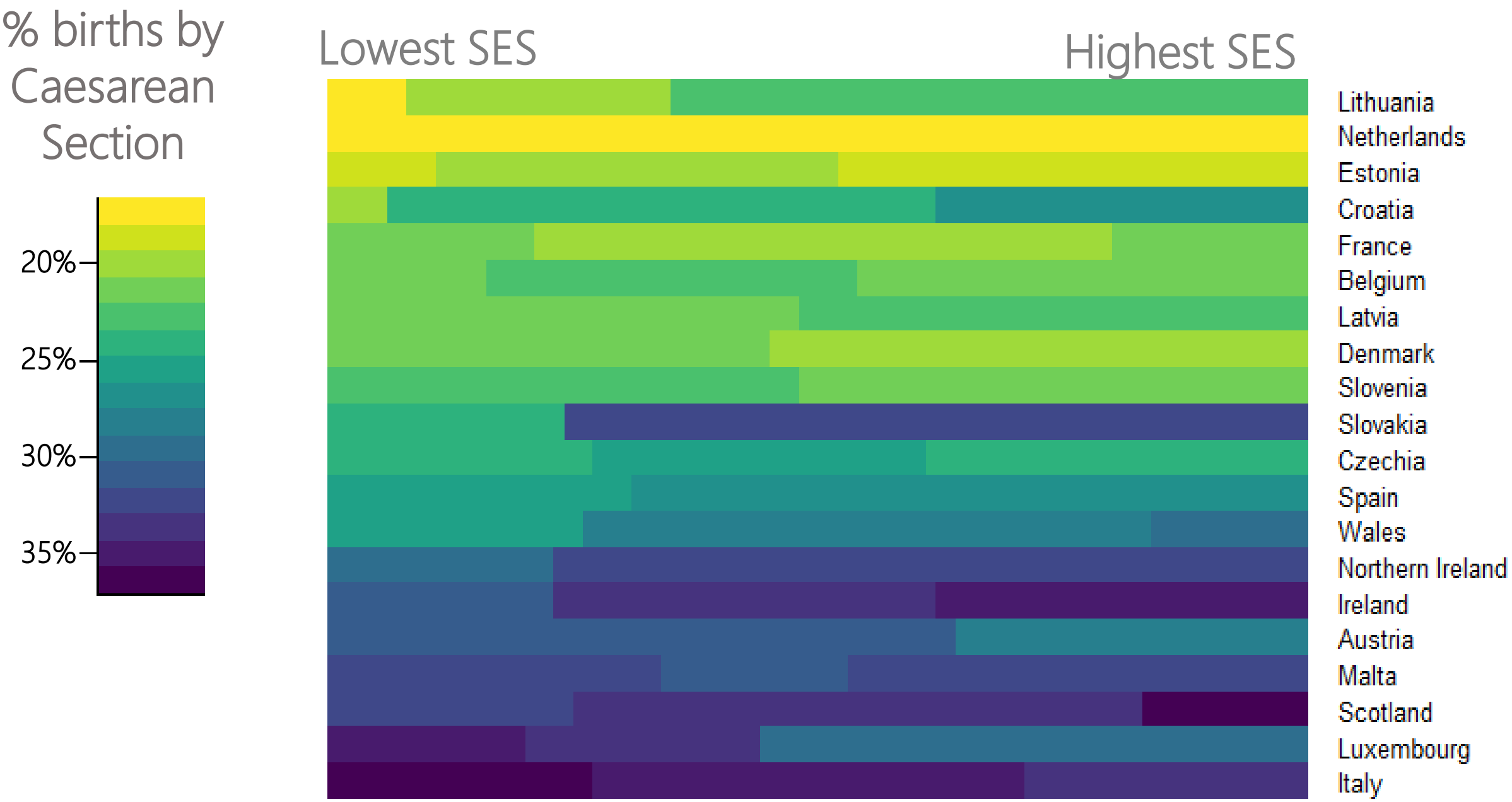


2.2 Very preterm singleton birth (22-31 weeks) per 100 singleton live births >=22 weeks gestation



2.3 Moderate and late preterm singleton birth (32-36 weeks) per 100 singleton live births >=32 weeks gestation



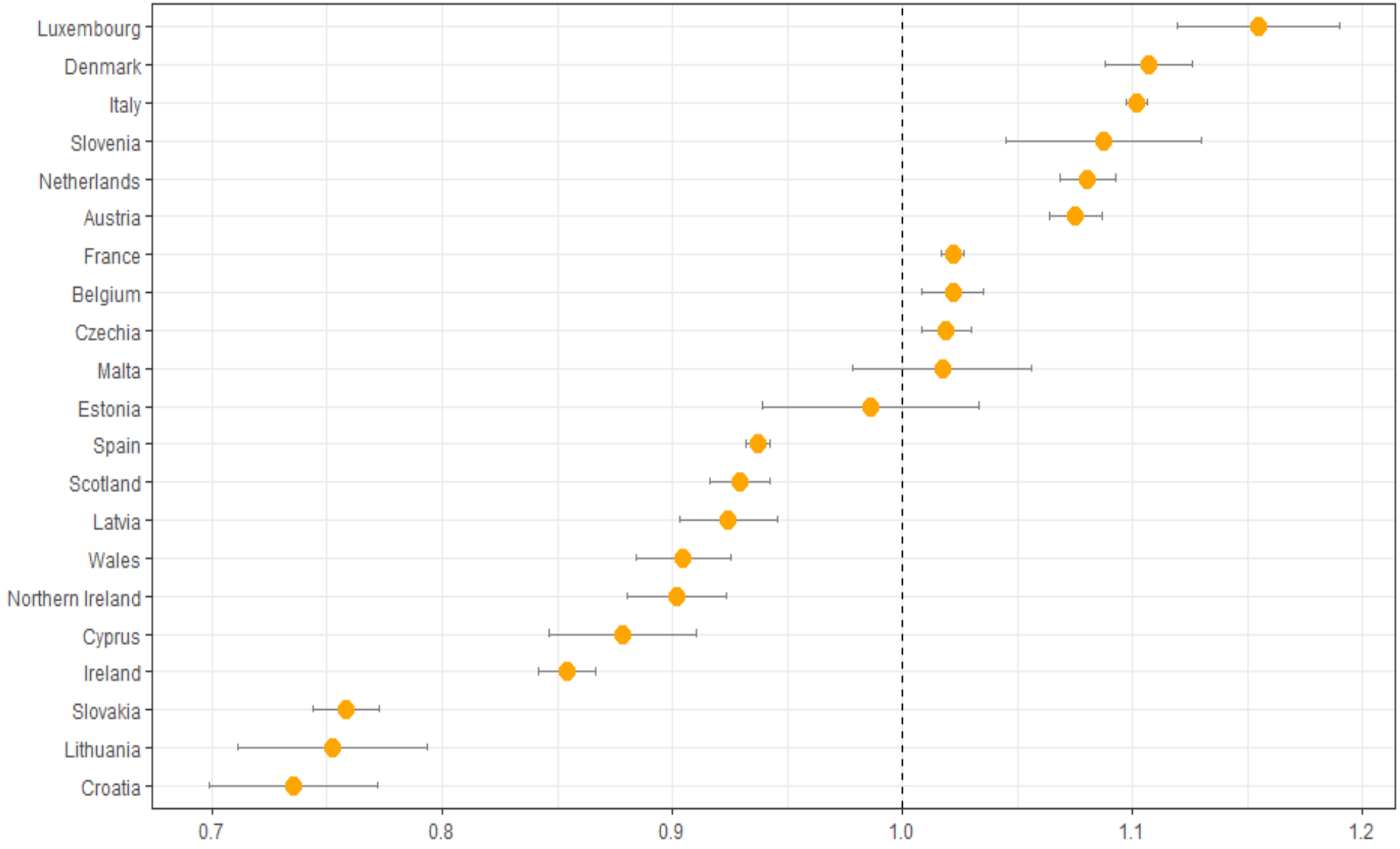

% births by Caesarean Section
20%
25%
30%
35%
Lowest SES
Highest SES
Lithuania
Netherlands
Estonia
Croatia
France
Belgium
Latvia
Denmark
Slovenia
Slovakia
Czechia
Spain
Wales
Northern Ireland
Ireland
Austria
Malta
Scotland
Luxembourg
Italy

C Section Risk ratio

% in Lowest SES
% in Highest SES

RR < 1 :
Increasing rate with increasing SES

RR > 1 :
Increasing rate with decreasing SES



How do inequalities vary by different types of C Section?

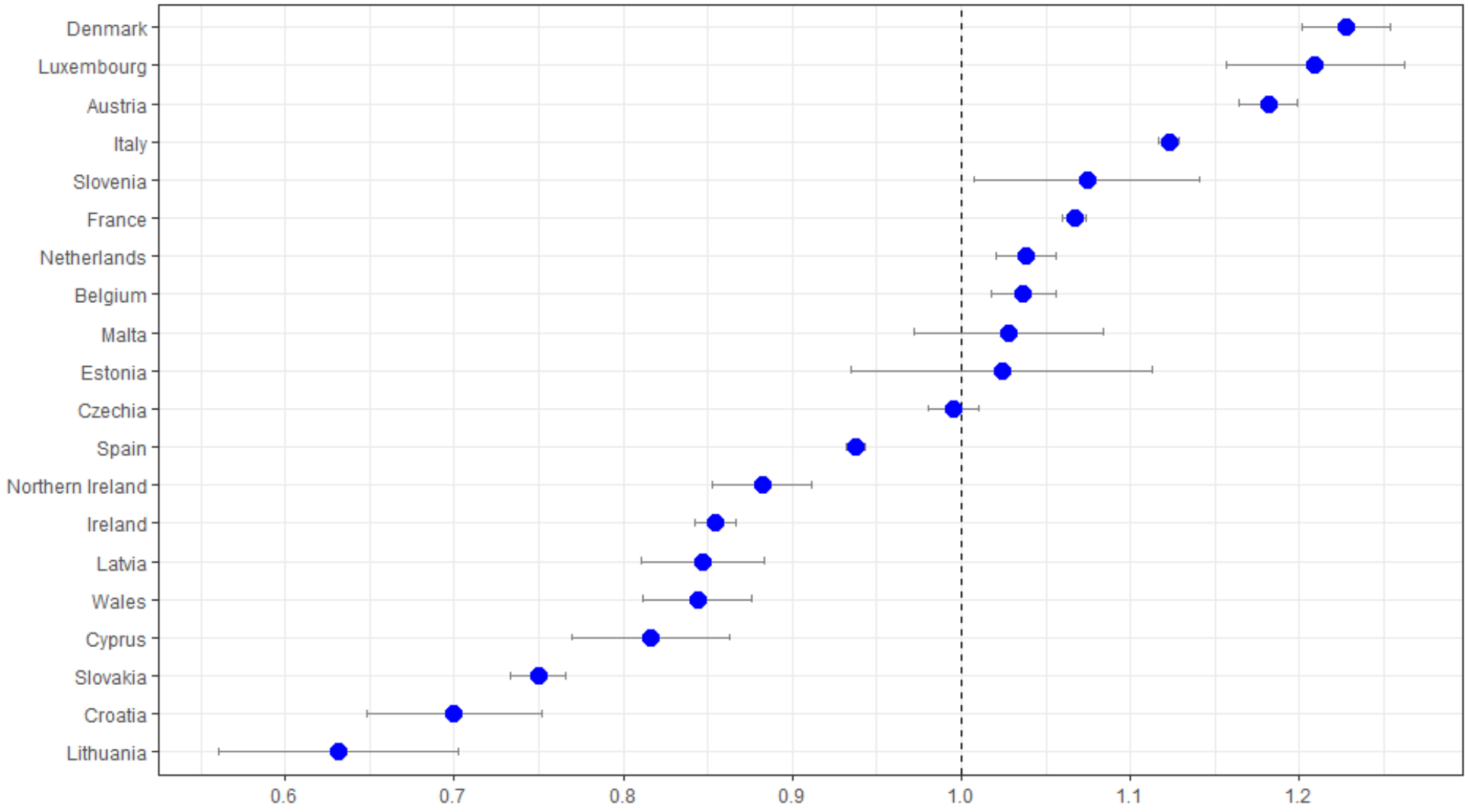
Pre-labour vs. Intrapartum

Pre Labour C Section Risk ratio

% in Lowest SES
% in Highest SES

RR < 1 :
Increasing rate with increasing SES

RR > 1 :
Increasing rate with decreasing SES

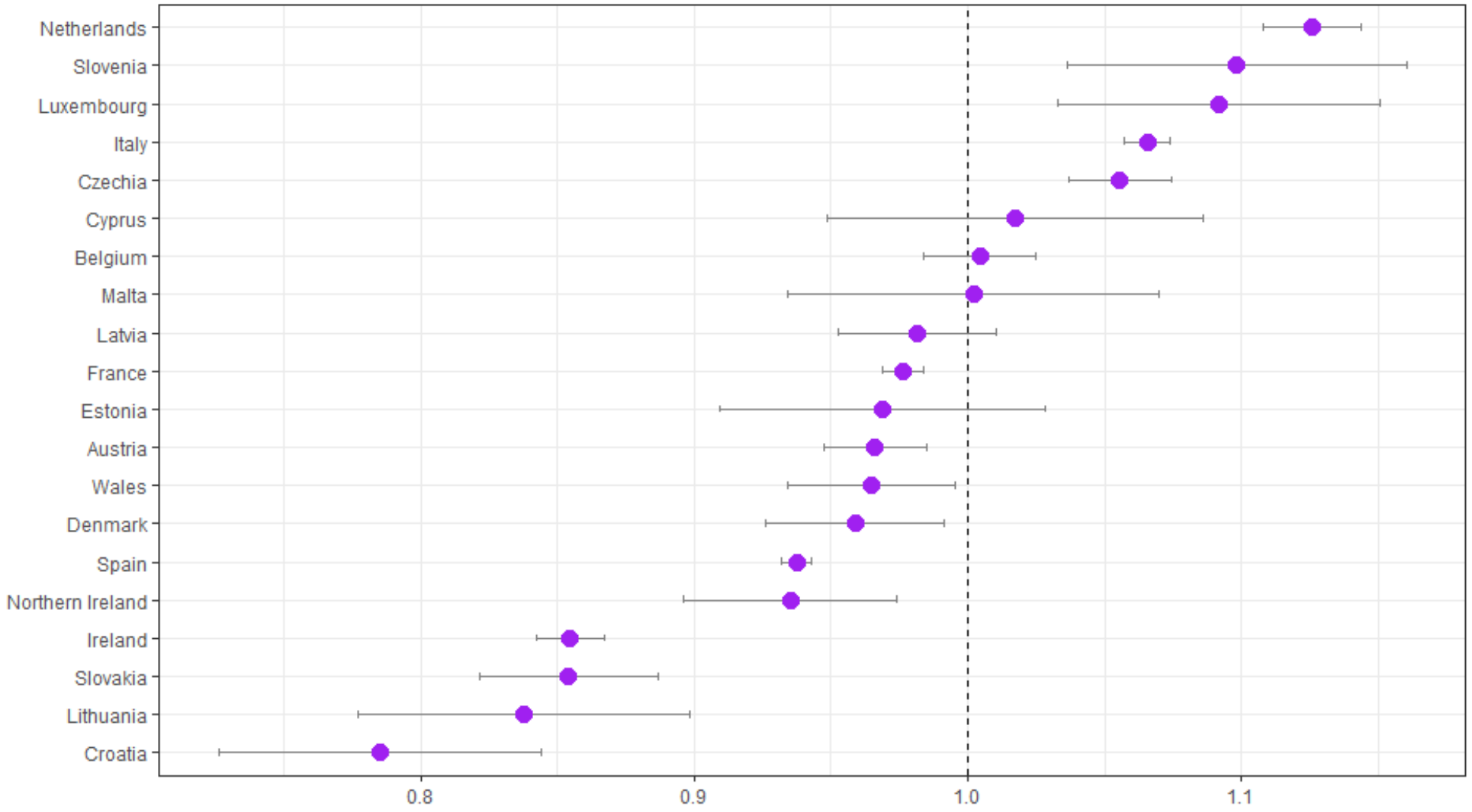


Intrapartum C Section Risk ratio

% in Lowest SES
% in Highest SES

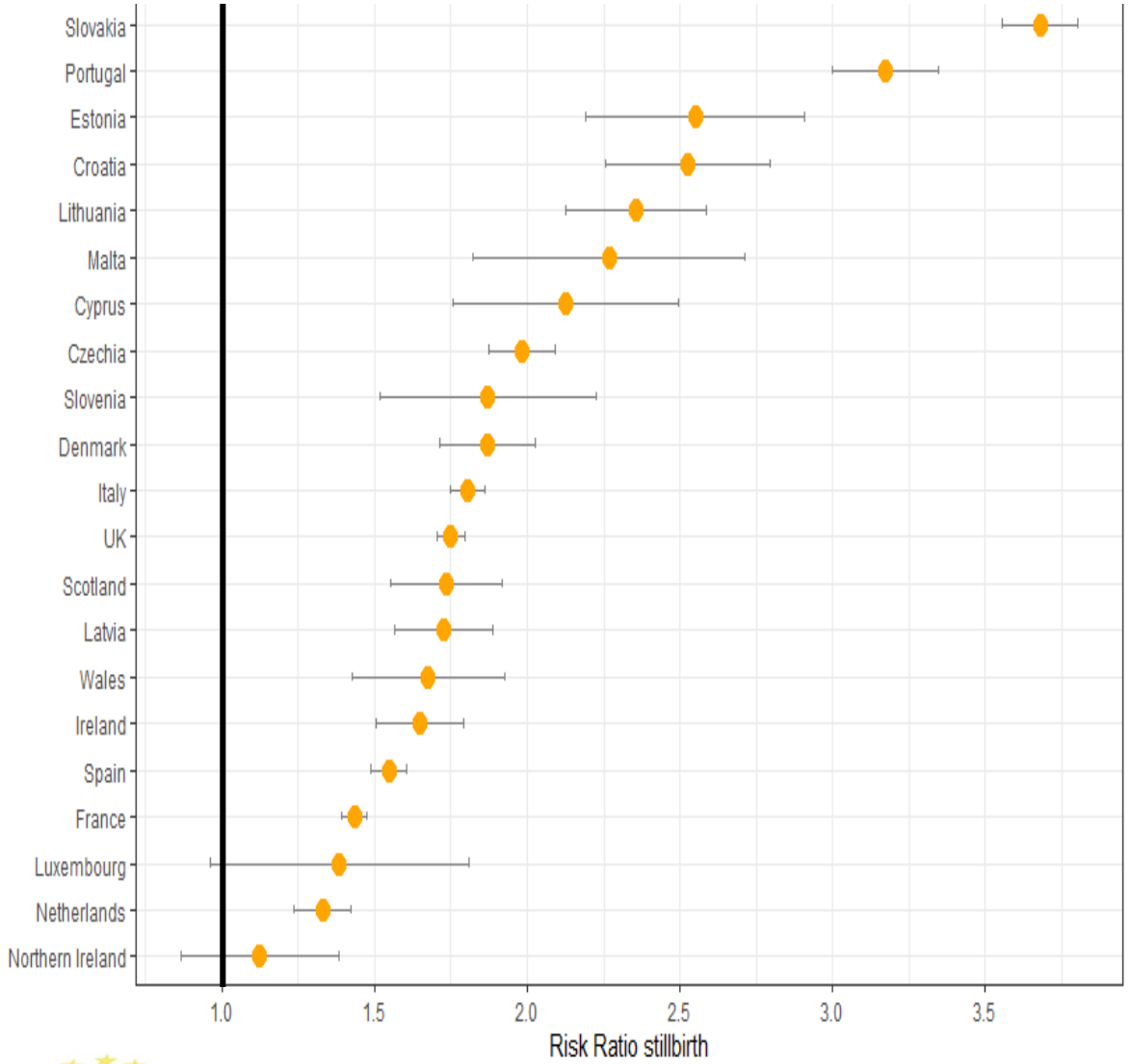
RR < 1 :
Increasing rate with increasing SES

RR > 1 :
Increasing rate with decreasing SES



Stillbirth Risk ratio : Lowest SES / Highest SES

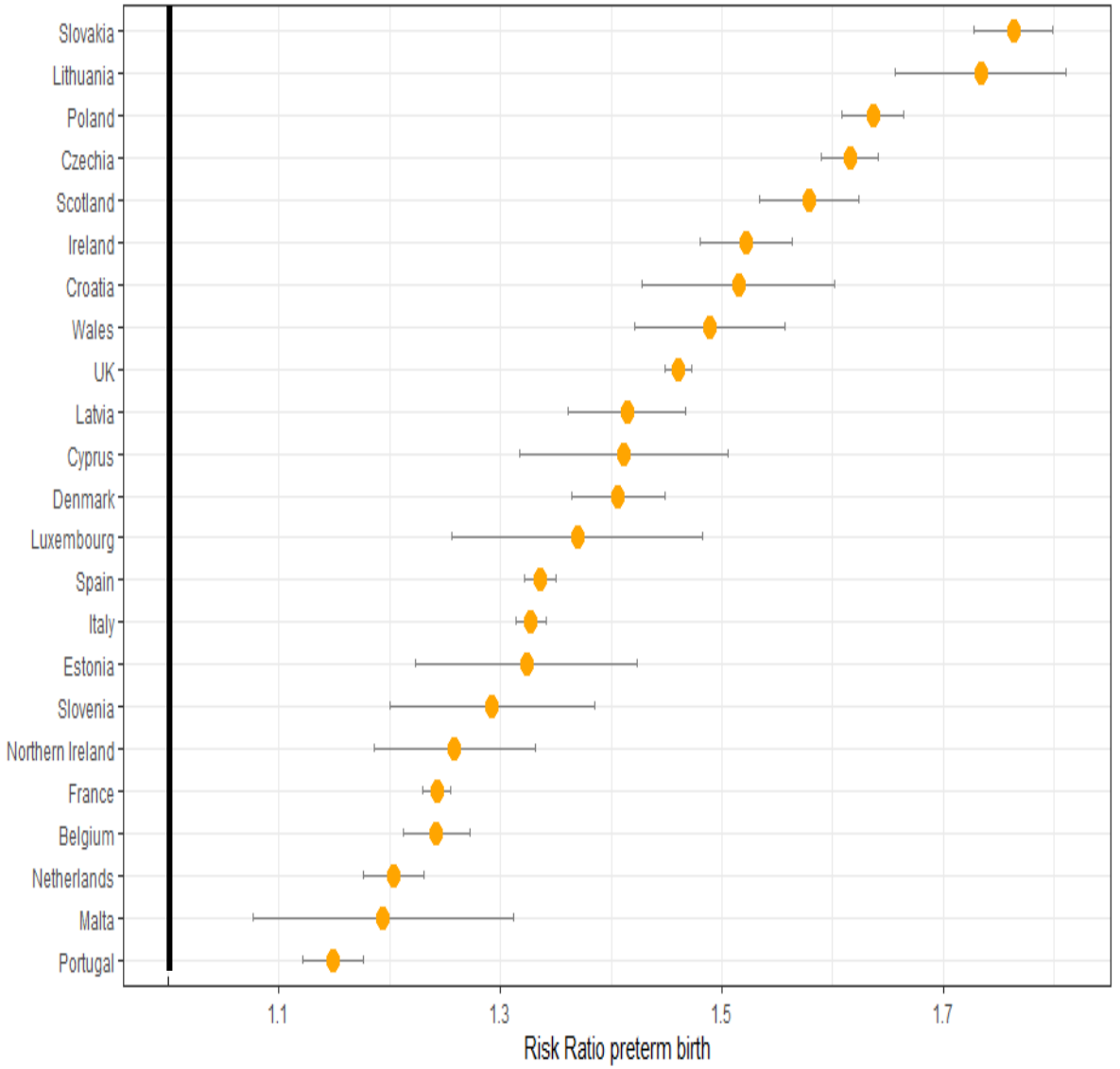
Rates above 1 suggest increasing rate with decreasing SES



Median: 1.8 per 1000 births

Preterm birth Risk ratio : Lowest SES / Highest SES

Rates above 1 suggest increasing rate with decreasing SES



Median: 1.4 per 1000 births

EURO PERISTAT

Summary

- Analyses based on routine data suggest wide differences in the social gradient associated with caesarean section rates
- On average, variation in effect was higher for prelabour compared to intrapartum caesarean

- 20 countries were able to link SES data and caesarean section rates suggesting data in routine systems can be used to set goals for the future and to monitor changes over time.
- Key learning for understanding variation internationally and within countries

Further work

- Explore and understand these findings within and between countries,
  - Integrating maternal and pregnancy characteristics
  - Healthcare context (type of hospital)
  - Regional differences
- Explore changes over time across countries

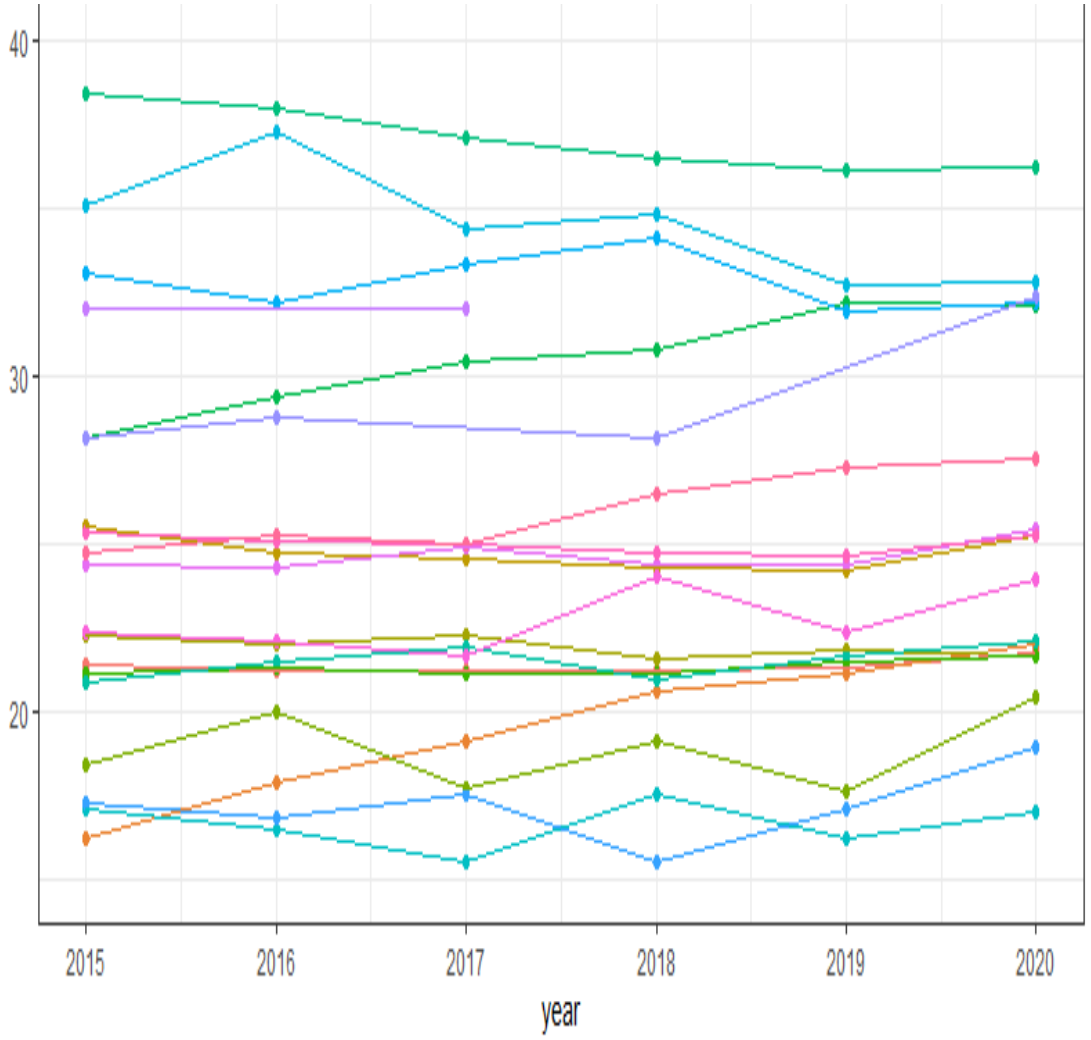
Thank you


EURO
PERISTAT


PHIRI
Population Health Information
Research Infrastructure

Trends by SES over time

Lowest SES



Highest SES