

Fetal and neonatal mortality in European countries

Ashna D. Mohangoo

Karin M. van der Pal - de Bruin

Jennifer Zeitlin

Euro-Peristat rules

- Euro-Peristat collects data on births and deaths at or after 22 completed weeks of gestation (22 weeks and 0 days)
- If gestational age is missing, a birth weight limit of 500 grams is used
- Births and deaths with missing information on *both* gestational age and birth weight are not included

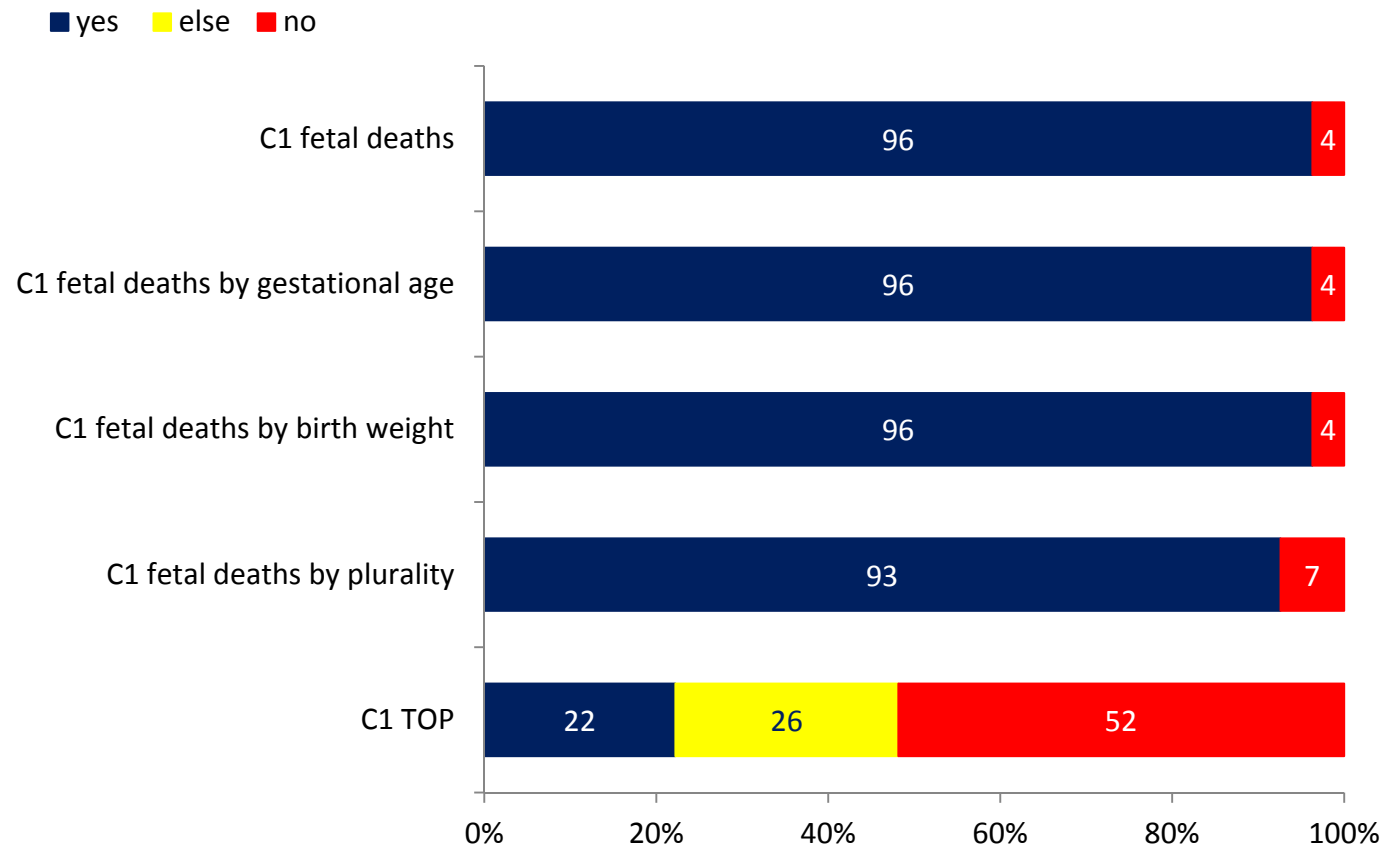
What is known from 2004

- Large variations in fetal and neonatal mortality rates in the European Union (EPHR 2008)
- Variation in (legal) limits for registration of fetal deaths (EPHR 2008)
- TOP were not systematically included as fetal deaths (EPHR 2008)
- *Real* fetal mortality at 22-27 weeks and *real* neonatal mortality at 22-23 weeks could not be assessed (Mohangoo 2011)
- For valid comparisons these births and deaths had to be excluded (Mohangoo 2011)

What has changed in 2010?

Fetal Mortality Rates

Data availability



Definitions

- Fetal mortality rate is defined as the number of fetal deaths in a given year per 1000 live and stillbirths in the same year
- Fetal deaths are presented for all stillborn babies including induced abortions at or after 22 completed weeks of gestation
- If data could not be provided using this definition, local definition was used

Country/coverage	Inclusion criteria for fetal deaths in 2010
BE: Brussels	22+ weeks or 500+ grams
BE: Flanders	22+ weeks
BE: Wallonia	22+ weeks or 500+ grams
Czech Republic	22+ weeks
Germany	500+ grams
Estonia	22+ weeks
Ireland	500+ grams or 24+ weeks
Spain	180 days
France	22+ weeks
Italy	22+ weeks
Cyprus	22+ weeks perinatal register; 28+weeks death register
Latvia	22+ weeks
Lithuania	22+ weeks
Luxembourg	22+ weeks
Hungary	legal 24+ wks or 500+g or 30+cm; fetal deaths and TOP at 22-23wks included
Malta	22+ weeks, if missing 500+ grams
The Netherlands (2009)	22+ weeks AND 500+ grams
Austria	500+ grams
Poland	500+ grams
Portugal	24+ weeks, voluntary data at 22-23 weeks
Romania	22+ weeks
Slovenia	500+ grams; in case of multiples, all babies are included if any fulfills criteria
Finland	22+ weeks
Sweden	
UK: Scotland	22+ weeks; not complete at 22-23 weeks
Norway	22+ weeks
Switzerland	22+ wks, 500+ g or (<22w and <500g) if there is a live twin

Country/coverage	Inclusion criteria for fetal deaths in 2010
BE: Brussels	22+ weeks or 500+ grams
BE: Flanders	22+ weeks
BE: Wallonia	22+ weeks or 500+ grams
Czech Republic	22+ weeks
Germany	500+ grams
Estonia	22+ weeks
Ireland	500+ grams or 24+ weeks
Spain	180 days
France	22+ weeks
Italy	22+ weeks
Cyprus	22+ weeks perinatal register; 28+weeks death register
Latvia	22+ weeks
Lithuania	22+ weeks
Luxembourg	22+ weeks
Hungary	legal 24+wks or 500+g or 30+cm; fetal deaths and TOP at 22-23wks included
Malta	22+ weeks, if missing 500+ grams
The Netherlands (2009)	22+ weeks AND 500+ grams
Austria	500+ grams
Poland	500+ grams
Portugal	24+ weeks, voluntary data at 22-23 weeks
Romania	22+ weeks
Slovenia	500+ grams; in case of multiples, all babies are included if any fulfills criteria
Finland	22+ weeks
Sweden	
UK: Scotland	22+ weeks; not complete at 22-23 weeks
Norway	22+ weeks
Switzerland	22+ wks, 500+ g or (<22w and <500g) if there is a live twin

Country/coverage	Inclusion criteria for fetal deaths in 2010
BE: Brussels	22+ weeks or 500+ grams
BE: Flanders	22+ weeks
BE: Wallonia	22+ weeks or 500+ grams
Czech Republic	22+ weeks
Germany	500+ grams
Estonia	22+ weeks
Ireland	500+ grams or 24+ weeks
Spain	180 days
France	22+ weeks
Italy	22+ weeks
Cyprus	22+ weeks perinatal register; 28+weeks death register
Latvia	22+ weeks
Lithuania	22+ weeks
Luxembourg	22+ weeks
Hungary	legal 24+wks or 500+g or 30+cm; fetal deaths and TOP at 22-23wks included
Malta	22+ weeks, if missing 500+ grams
The Netherlands (2009)	22+ weeks AND 500+ grams
Austria	500+ grams
Poland	500+ grams
Portugal	24+ weeks, voluntary data at 22-23 weeks
Romania	22+ weeks
Slovenia	500+ grams; in case of multiples, all babies are included if any fulfills criteria
Finland	22+ weeks
Sweden	
UK: Scotland	22+ weeks; not complete at 22-23 weeks
Norway	22+ weeks
Switzerland	22+ wks, 500+ g or (<22w and <500g) if there is a live twin

Registration of TOP

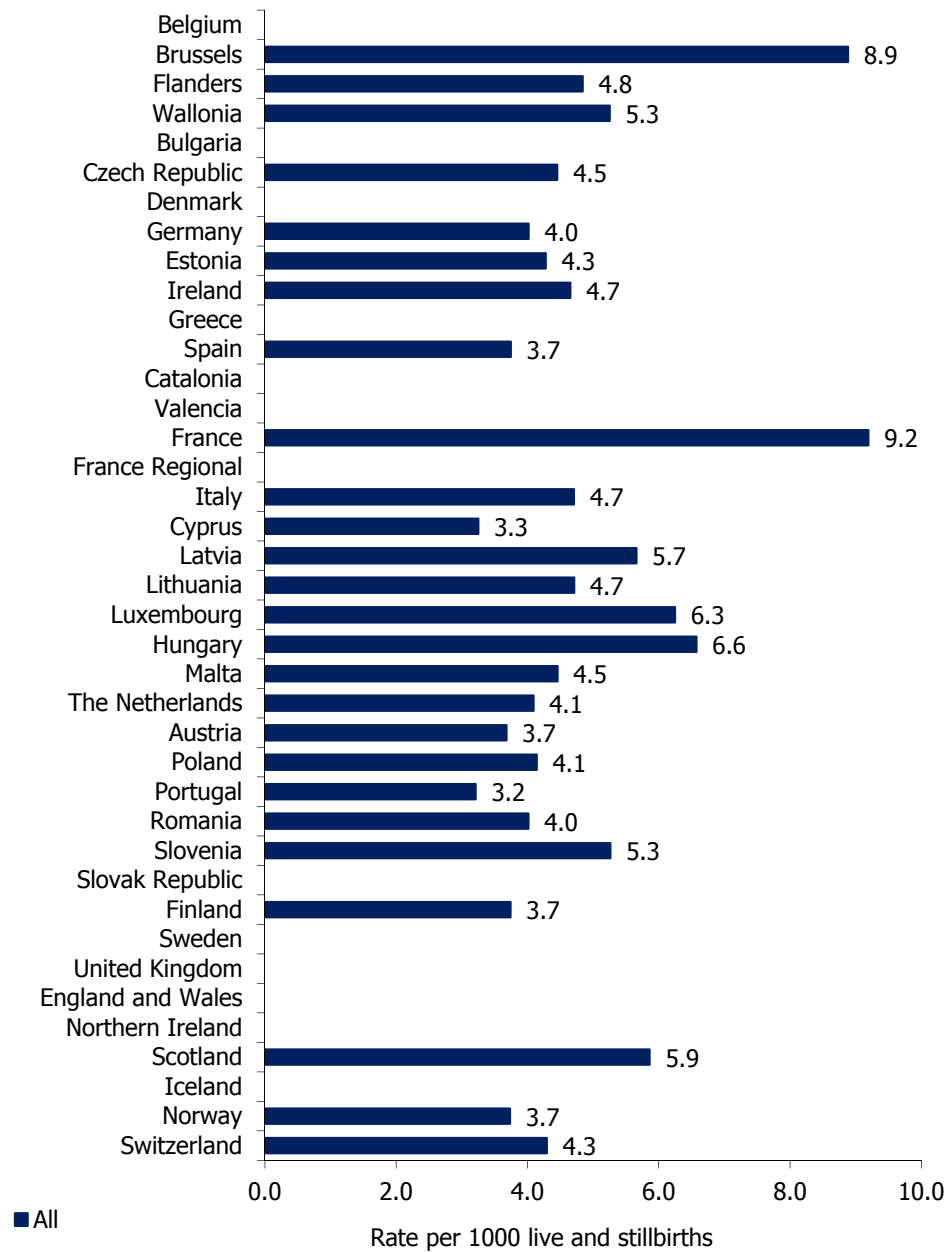
Country/region	TOP?	Comments
BE: Brussels	Yes	No distinction between spontaneous and induced abortions
BE: Flanders	No	
BE: Wallonia	Yes	No distinction between spontaneous and induced abortions
Czech Republic	Yes	
Germany	Yes	Without data on TOP
Estonia	?	TOP are legally allowed up to 20 weeks of gestation. If induced after 20 weeks and child is born alive, it is recorded under live birth
Ireland	?	
Spain	Yes	Without data on TOP
France	Yes	
Italy	Yes	
Cyprus	Yes	No distinction between spontaneous and induced abortions
Latvia	No	
Lithuania	No	
Luxembourg	Yes	No distinction between spontaneous and induced abortions
Hungary	Yes	
Malta	No TOP	Illegal
The Netherlands	Yes	No distinction between spontaneous and induced abortions
Austria	No	
Poland	No TOP	TOP after fetus reaches viability is forbidden by law; no TOP included
Portugal	No	
Romania	No	
Slovenia	?	
Finland	No	TOP are not included in sources 1 and 2 according to the Finnish ICD-10
Sweden	?	
UK: Scotland	Yes	
Norway	No	
Switzerland	Yes	14 neonatal deaths following TOP are included as TOP

Country/region	TOP?	Comments
BE: Brussels	Yes	No distinction between spontaneous and induced abortions
BE: Flanders	No	
BE: Wallonia	Yes	No distinction between spontaneous and induced abortions
Czech Republic	Yes	
Germany	Yes	Without data on TOP
Estonia	?	TOP are legally allowed up to 20 weeks of gestation. If induced after 20 weeks and child is born alive, it is recorded under live birth
Ireland	?	
Spain	Yes	Without data on TOP
France	Yes	
Italy	Yes	
Cyprus	Yes	No distinction between spontaneous and induced abortions
Latvia	No	
Lithuania	No	
Luxembourg	Yes	No distinction between spontaneous and induced abortions
Hungary	Yes	
Malta	No TOP	Illegal
The Netherlands	Yes	No distinction between spontaneous and induced abortions
Austria	No	
Poland	No TOP	TOP after fetus reaches viability is forbidden by law; no TOP included
Portugal	No	
Romania	No	
Slovenia	?	
Finland	No	TOP are not included in sources 1 and 2 according to the Finnish ICD-10
Sweden	?	
UK: Scotland	Yes	
Norway	No	
Switzerland	Yes	14 neonatal deaths following TOP are included as TOP

Country/region	TOP?	Comments
BE: Brussels	Yes	No distinction between spontaneous and induced abortions
BE: Flanders	No	
BE: Wallonia	Yes	No distinction between spontaneous and induced abortions
Czech Republic	Yes	
Germany	Yes	Without data on TOP
Estonia	?	TOP are legally allowed up to 20 weeks of gestation. If induced after 20 weeks and child is born alive, it is recorded under live birth
Ireland	?	
Spain	Yes	Without data on TOP
France	Yes	
Italy	Yes	
Cyprus	Yes	No distinction between spontaneous and induced abortions
Latvia	No	
Lithuania	No	
Luxembourg	Yes	No distinction between spontaneous and induced abortions
Hungary	Yes	
Malta	No TOP	Illegal
The Netherlands	Yes	No distinction between spontaneous and induced abortions
Austria	No	
Poland	No TOP	TOP after fetus reaches viability is forbidden by law; no TOP included
Portugal	No	
Romania	No	
Slovenia	?	
Finland	No	TOP are not included in sources 1 and 2 according to the Finnish ICD-10
Sweden	?	
UK: Scotland	Yes	
Norway	No	
Switzerland	Yes	14 neonatal deaths following TOP are included as TOP

Country/region	TOP?	Comments
BE: Brussels	Yes	No distinction between spontaneous and induced abortions
BE: Flanders	No	
BE: Wallonia	Yes	No distinction between spontaneous and induced abortions
Czech Republic	Yes	
Germany	Yes	Without data on TOP
Estonia	?	TOP are legally allowed up to 20 weeks of gestation. If induced after 20 weeks and child is born alive, it is recorded under live birth
Ireland	?	
Spain	Yes	Without data on TOP
France	Yes	
Italy	Yes	
Cyprus	Yes	No distinction between spontaneous and induced abortions
Latvia	No	
Lithuania	No	
Luxembourg	Yes	No distinction between spontaneous and induced abortions
Hungary	Yes	
Malta	No TOP	Illegal
The Netherlands	Yes	No distinction between spontaneous and induced abortions
Austria	No	
Poland	No TOP	TOP after fetus reaches viability is forbidden by law; no TOP included
Portugal	No	
Romania	No	
Slovenia	?	
Finland	No	TOP are not included in sources 1 and 2 according to the Finnish ICD-10
Sweden	?	
UK: Scotland	Yes	
Norway	No	
Switzerland	Yes	14 neonatal deaths following TOP are included as TOP

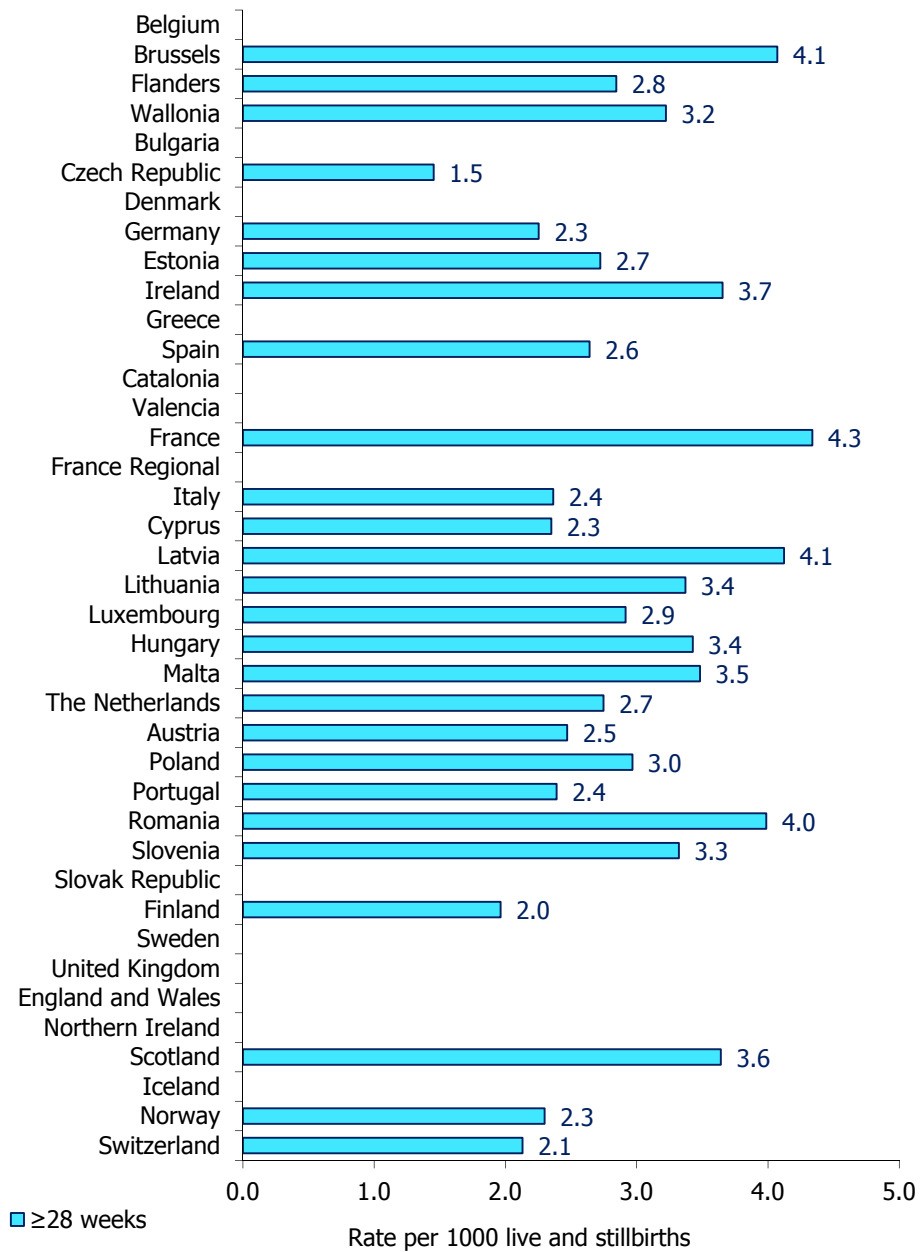
Country/region	TOP?	Comments
BE: Brussels	Yes	
BE: Flanders	No	
BE: Wallonia	Yes	
Czech Republic	Yes	338/521 fetal deaths were TOP (65%)
Germany	Yes	
Estonia	?	
Ireland	?	
Spain	Yes	
France	Yes	53/137 fetal deaths were TOP (39%)
Italy	Yes	482/2579 fetal deaths were TOP (19%)
Cyprus	Yes	
Latvia	No	
Lithuania	No	
Luxembourg	Yes	
Hungary	Yes	75/598 fetal deaths were TOP (13%)
Malta	No TOP	
The Netherlands	Yes	
Austria	No	
Poland	No TOP	
Portugal	No	
Romania	No	
Slovenia	?	
Finland	No	
Sweden	?	
UK: Scotland	Yes	21/337 fetal deaths were TOP (6%)
Norway	No	
Switzerland	Yes	52/345 fetal deaths were TOP (15%)



Large variation in overall FMR in 2010

Range 3.2-9.2‰

Highest rates ≈3x higher than lowest



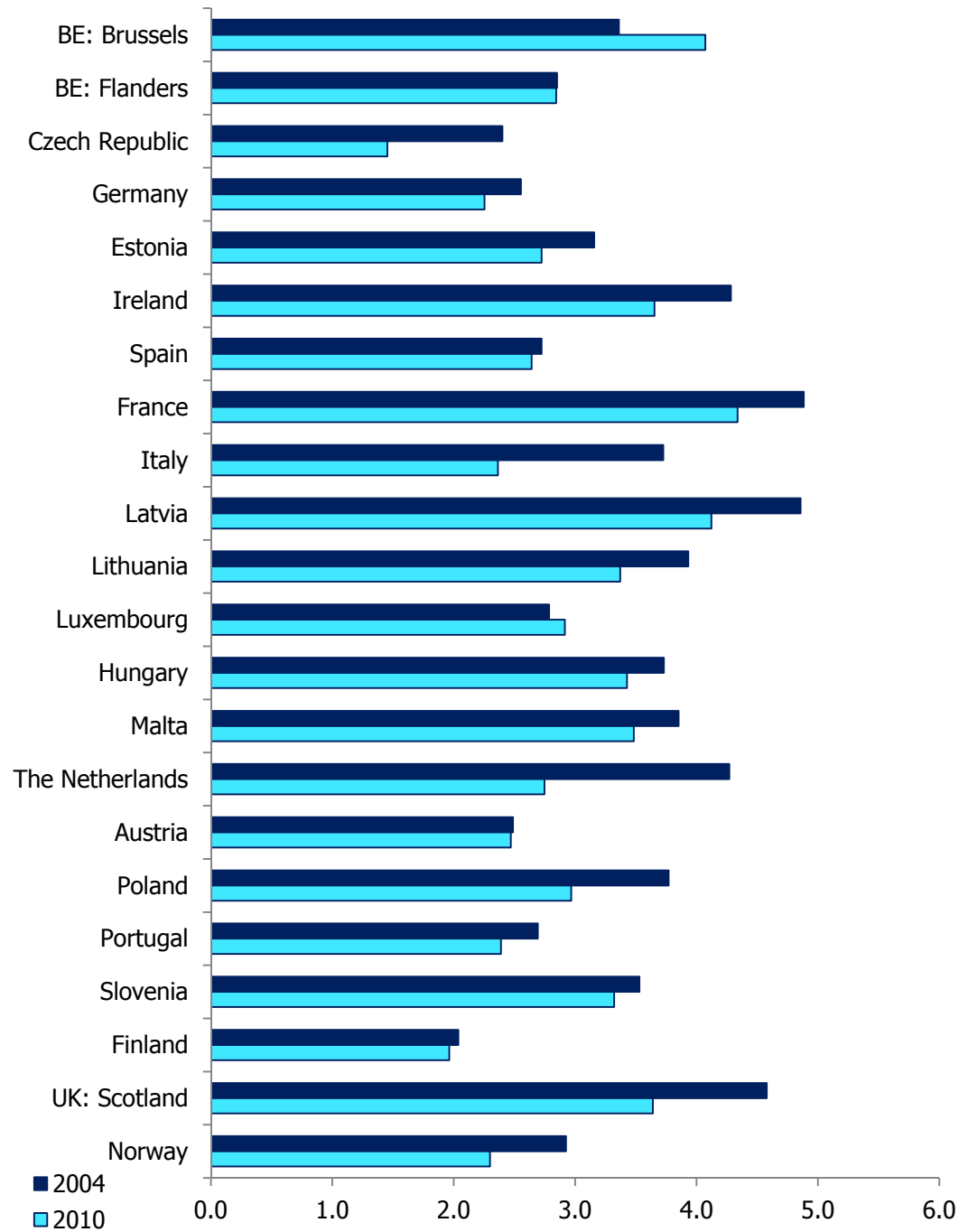
Large variation in FMR ≥ 28 weeks

Range 1.5-4.3‰

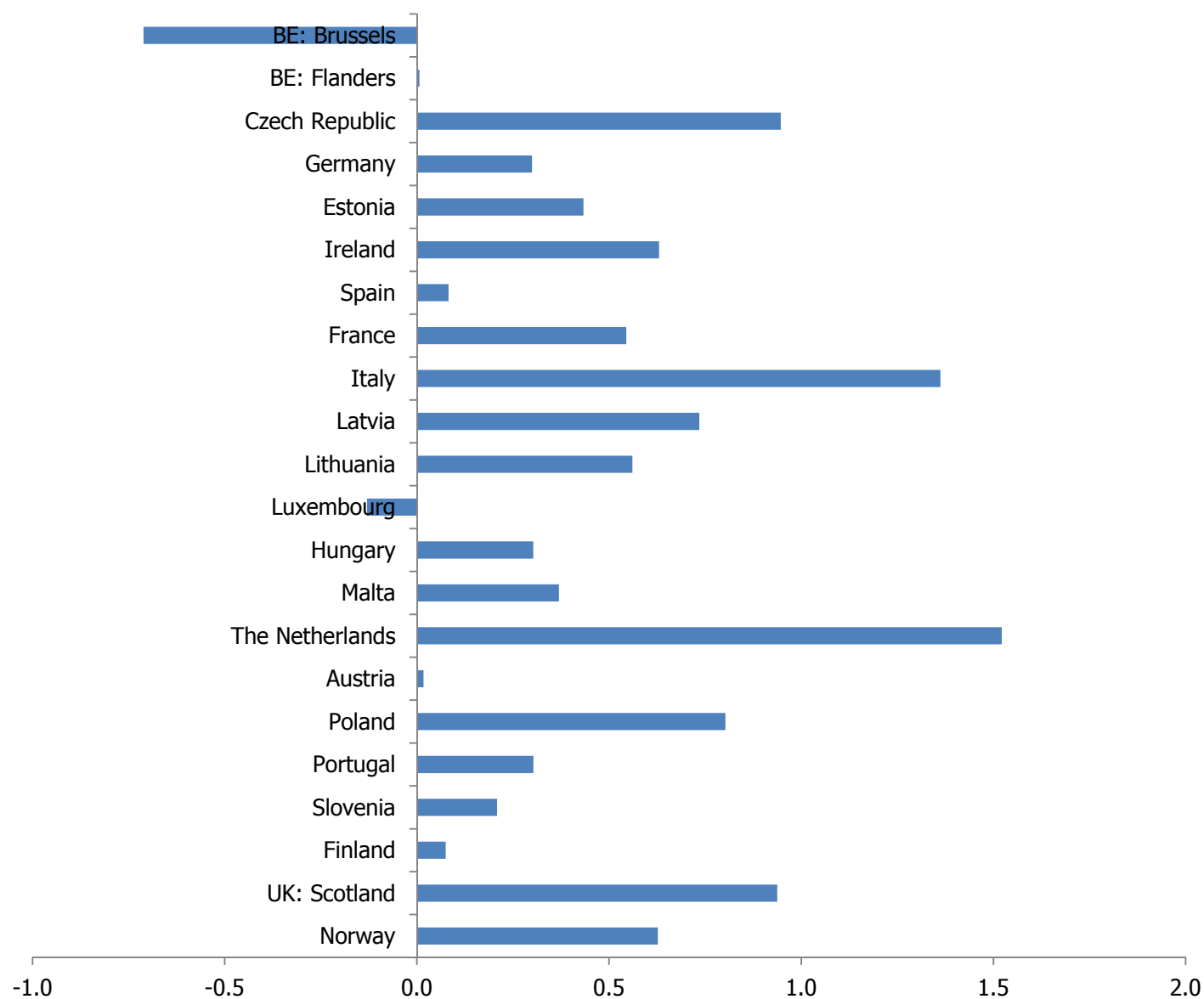
Highest rates ≈ 3 x higher than lowest

FMR ≥ 28 weeks 2004 vs. 2010

Rates declined in most countries/regions

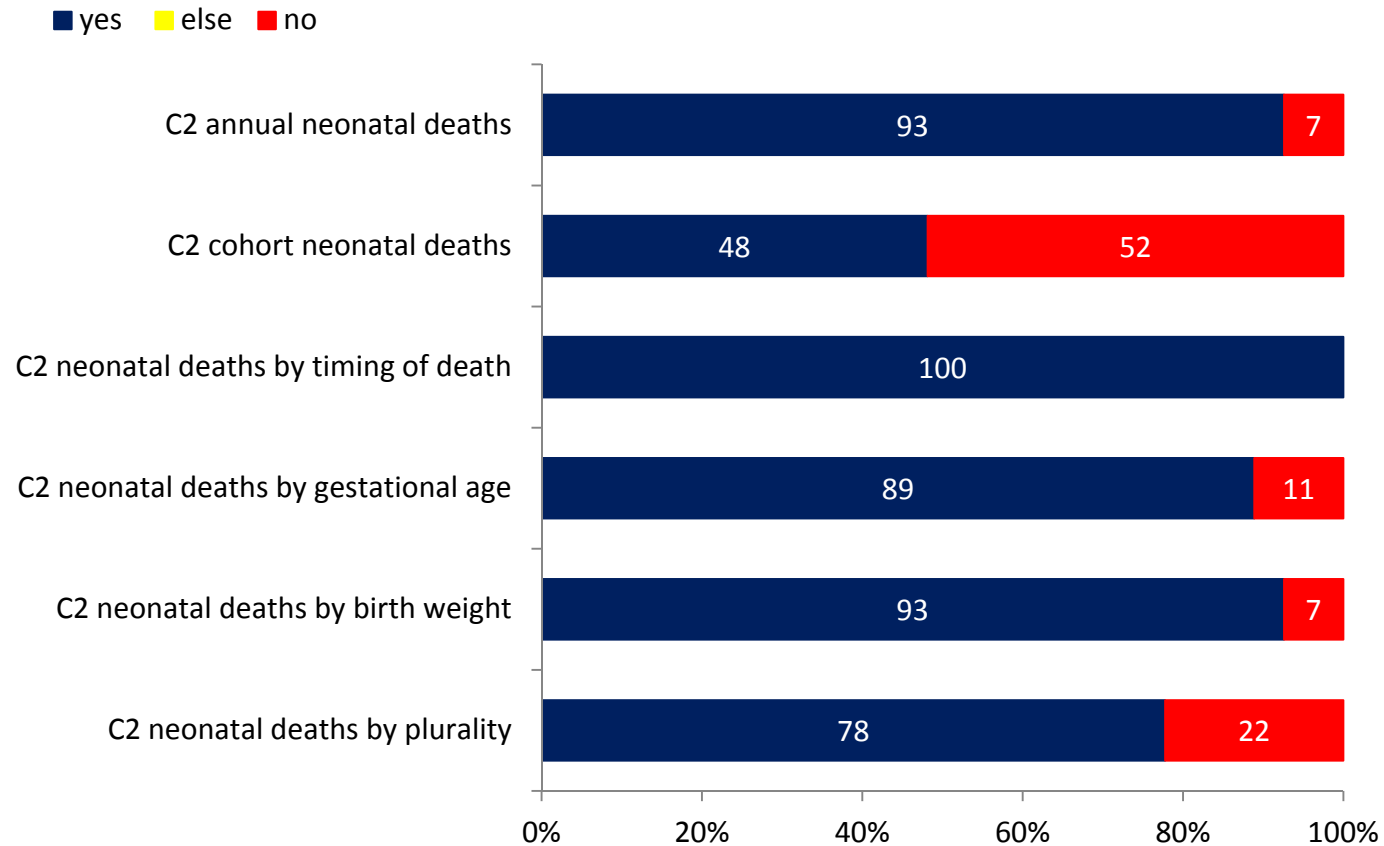


FMR ≥ 28 weeks: 2004 minus 2010



Neonatal Mortality Rates

Data availability



Neonatal mortality

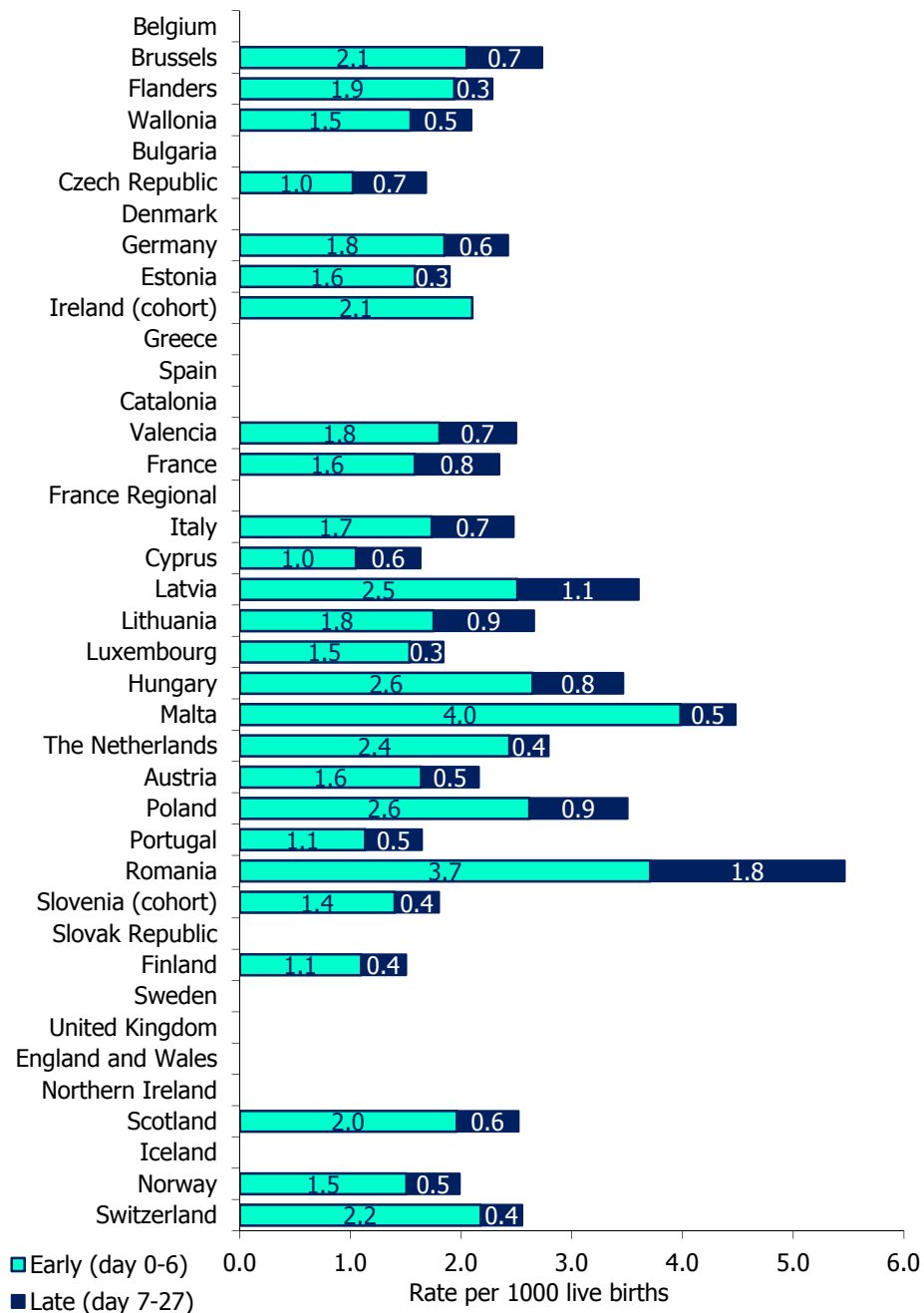
- Annual neonatal mortality rate is defined as the number of neonatal deaths in 2010 per 1000 live births in 2010
- Cohort neonatal mortality rate is defined as the number of neonatal deaths per 1000 live births occurring to babies born in 2010

Country/coverage	Inclusion criteria for live births
BE: Brussels	22+ weeks or 500+ grams
BE: Flanders	22+ weeks
BE: Wallonia	22+ weeks or 500+ grams
Czech Republic	22+ weeks
Germany	22+ weeks
Estonia	22+ weeks
Ireland	500+ grams
ES: Valencia	22+ weeks
France	22+ weeks or 500+ grams
Italy	22+ weeks
Cyprus	22+ weeks
Latvia	22+ weeks
Lithuania	22+ weeks
Luxembourg	22+ weeks
Hungary	22+ weeks
Malta	22+ weeks or 500+ grams
The Netherlands	22+ weeks AND 500+ grams
Austria	500+ grams
Poland	22+ weeks
Portugal	22+ weeks (not complete at 22-23 weeks)
Romania	22+ weeks
Slovenia	22+ weeks
Finland	22+ weeks
Sweden	22+ weeks
UK: Scotland	22+ weeks
Norway	22+ weeks
Switzerland	22+ weeks or 500+ grams

Country/coverage	Inclusion criteria for live births
BE: Brussels	22+ weeks or 500+ grams
BE: Flanders	22+ weeks
BE: Wallonia	22+ weeks or 500+ grams
Czech Republic	22+ weeks
Germany	22+ weeks
Estonia	22+ weeks
Ireland	500+ grams
ES: Valencia	22+ weeks
France	22+ weeks or 500+ grams
Italy	22+ weeks
Cyprus	22+ weeks
Latvia	22+ weeks
Lithuania	22+ weeks
Luxembourg	22+ weeks
Hungary	22+ weeks
Malta	22+ weeks or 500+ grams
The Netherlands	22+ weeks AND 500+ grams
Austria	500+ grams
Poland	22+ weeks
Portugal	22+ weeks (not complete at 22-23 weeks)
Romania	22+ weeks
Slovenia	22+ weeks
Finland	22+ weeks
Sweden	22+ weeks
UK: Scotland	22+ weeks
Norway	22+ weeks
Switzerland	22+ weeks or 500+ grams

Annual vs. Cohort deaths

- Except for Ireland and Slovenia, countries/regions provided annual neonatal deaths
- 13 out of 27 countries/regions provided cohort deaths
- Differences between annual and cohort rates are minimal (data not presented)
- This presentation uses data on annual rates except when these are not available



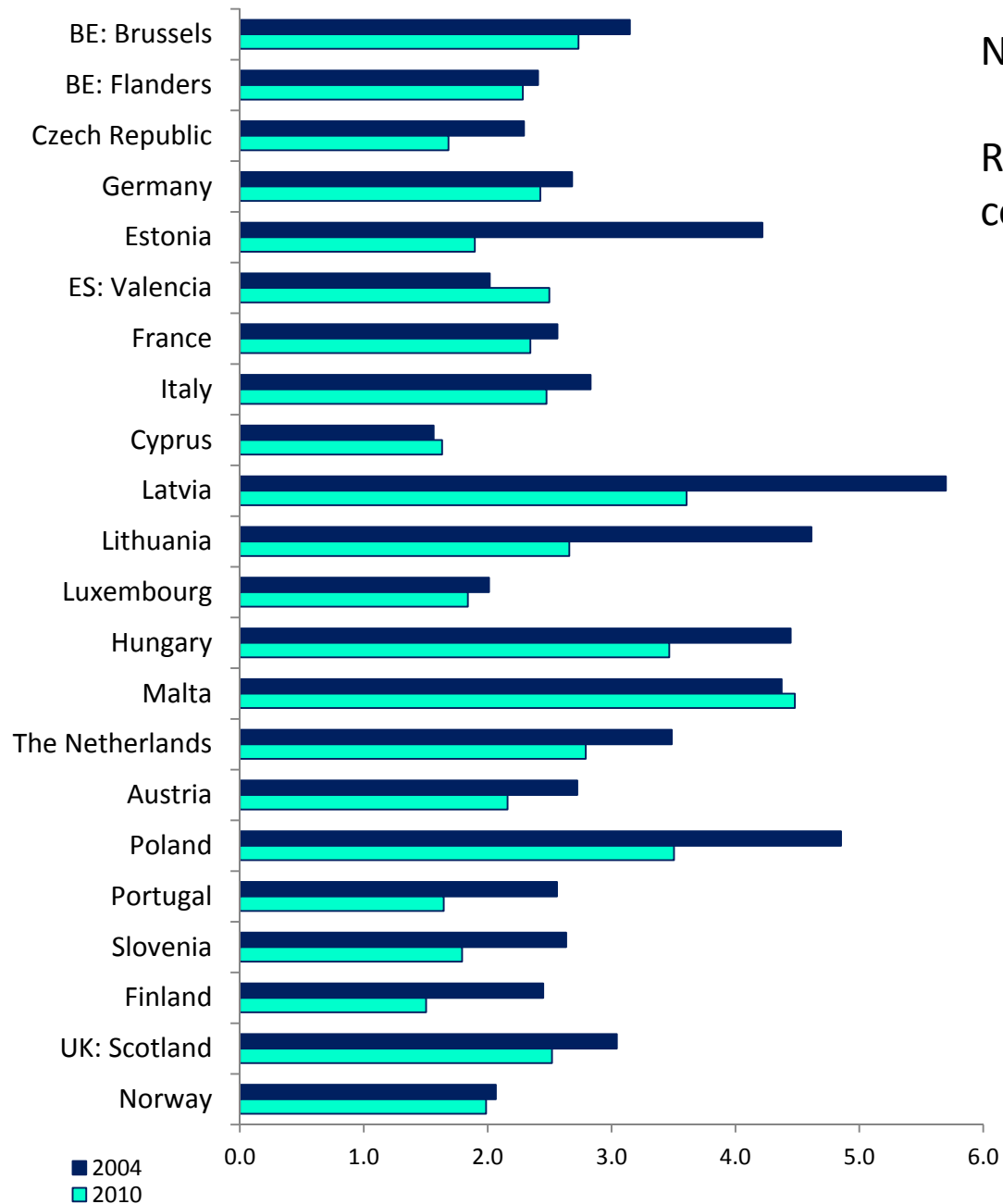
Large variation in overall NMR in 2010

Range 1.5-4.5‰

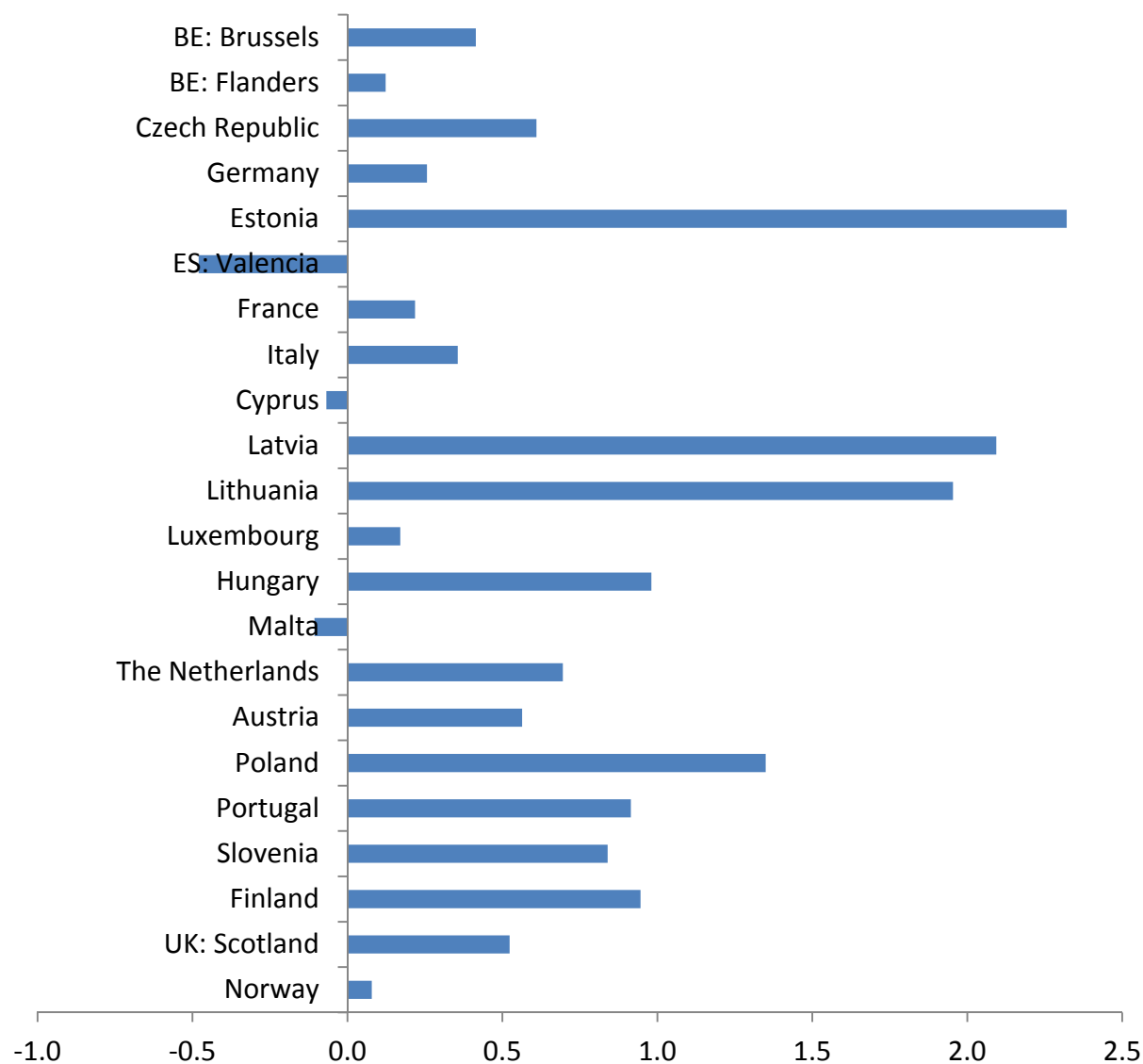
Highest rate ≈3x higher than lowest

NMR ≥ 22 weeks 2004 vs. 2010

Rates declined in most
countries/regions



NMR ≥ 22 weeks: 2004 minus 2010



Conclusions

- Still large variability in fetal and neonatal mortality rates in European countries
- Improvements between 2004 and 2010 in most countries, especially
 - FMR in Italy and the Netherlands
 - NMR among new MS of 2004 (except Malta)
- Comparability issues
 - TOP registration and fetal deaths 22-27 weeks
 - Live births and neonatal deaths at 22-23 weeks

Discussion points

- Explanations for large changes between 2004 and 2010 in some countries
- Cut-offs for presenting data on
 - Fetal mortality
 - Neonatal mortality
- How should we manage TOP?