

International workshop on Medical Physics and Biomedical Engineering in Ohrid July 2018

## Health Needs in Balkans

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## Contents:

1. Availability of medical technology:
  - Imaging equipment
  - Use of imaging equipment
2. Radiotherapy treatment equipment
3. Cancer statistics

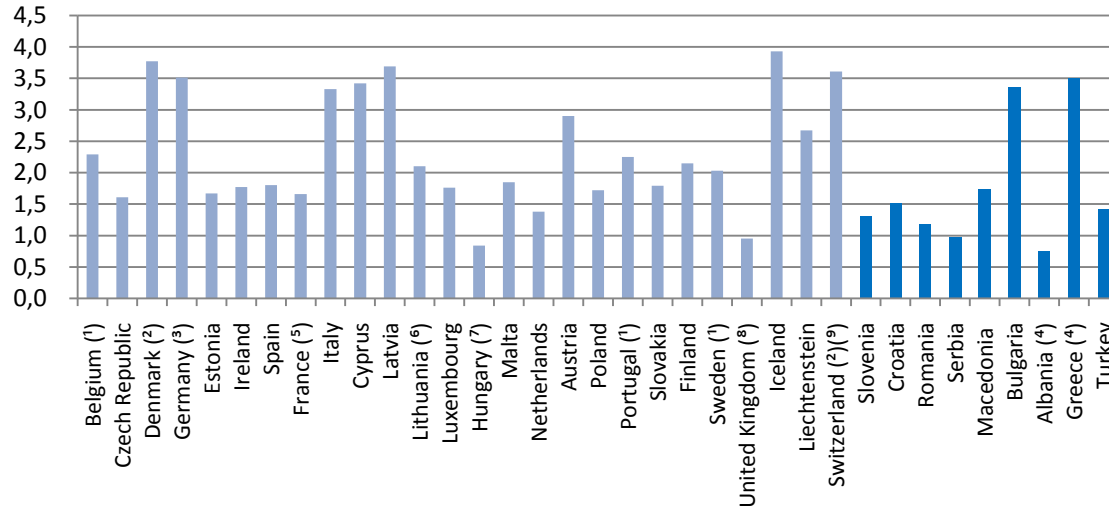
# Geographical Southeast Europe



- Albania
- Bosnia and Herzegovina
- Bulgaria
- Croatia
- Greece
- Kosovo<sup>[a]</sup>
- Macedonia
- Montenegro
- Romania
- Serbia
- Slovenia
- Turkey \*

# 1. Availability of medical technology - imaging equipment - 2015 (MK 2018)

**Computed tomography - CT scanners (per 100 000 inhabitants)**



## SEEU

The most	3.5	(Greece, Bulgaria)
The least	0.8	(Albania)
Average	1.7	

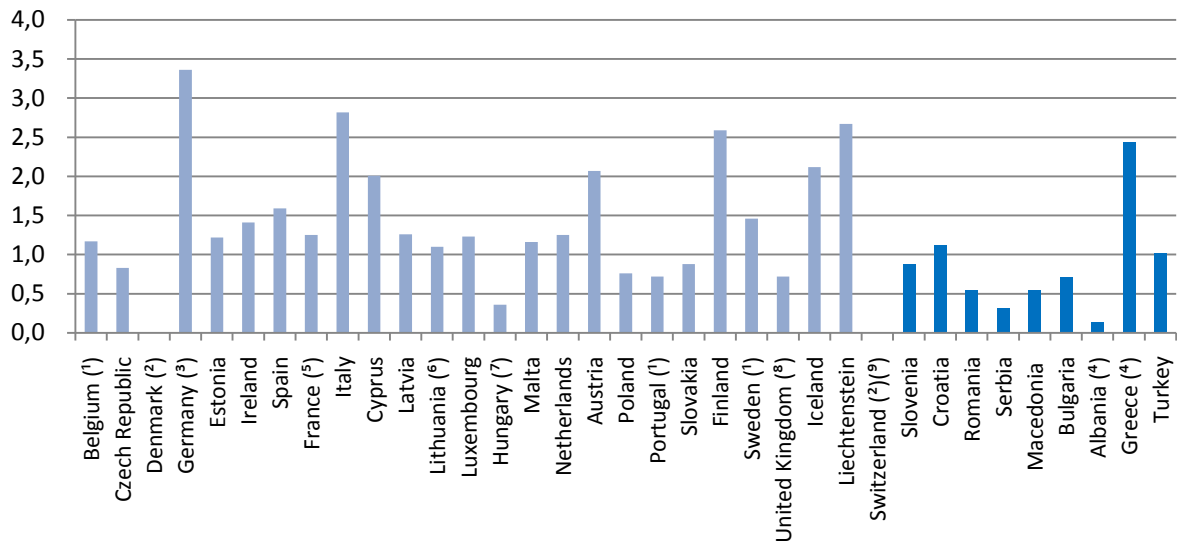
## EU

The most	3.9	(Denmark, Switzerland)
The least	0.8	(Hungary)
Average	2.3	

24% less

# 1. Availability of medical technology - imaging equipment - 2015 (MK 2018)

**Magnetic resonance imaging - MRI units (per 100 000 inhabitants)**



43% less

SEEU

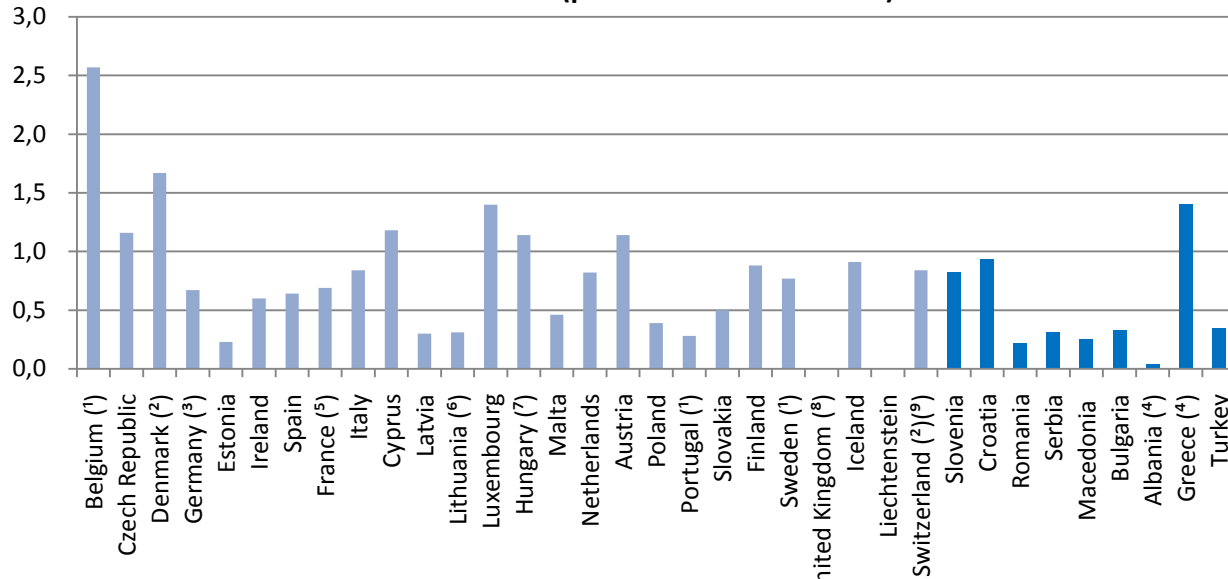
The most 2.4 (Greece)  
 The least 0.1 (Albania)  
 Average 0.8

EU

The most 3.4 (Germany)  
 The least 0.4 (Hungary)  
 Average 1.5

# 1. Availability of medical technology - imaging equipment - 2015 (MK 2018)

**Gamma cameras (per 100 000 inhabitants)**



37 % less

SEEU

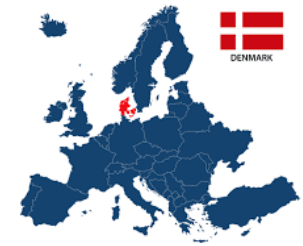
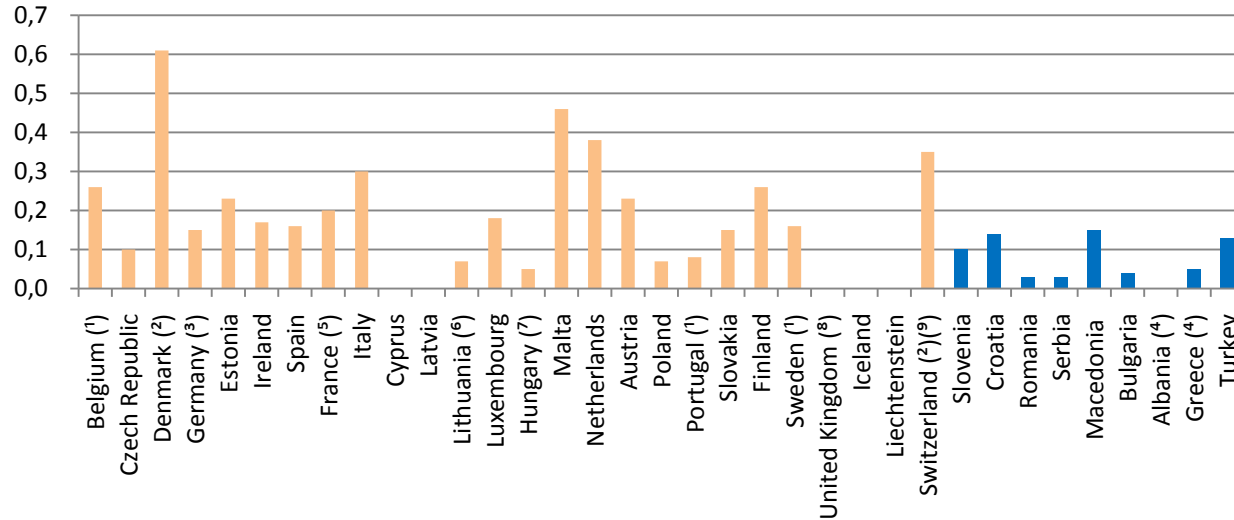
The most 1.4 (Greece)  
 The least 0.03 (Albania)  
 Average 0.52

EU

The most 2.6 (Belgium)  
 The least 0.2 (Estonia)  
 Average 0.82

# 1. Availability of medical technology - imaging equipment - 2015 (MK 2018)

**PET scanners (per 100 000 inhabitants)**



SEEU

The most 0.2 (Macedonia\*2018)

The least (Albania)

Average 0.08

EU

The most 0.6 (Denmark)

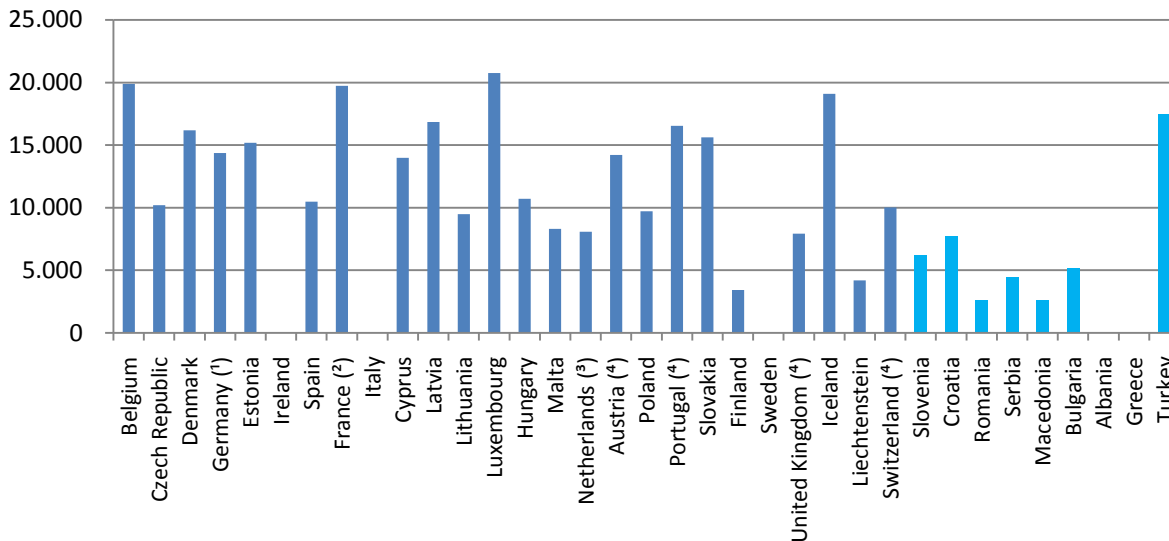
The least (Latvia, Cyprus,...)

Average 0.18

55 % less

# 1. Availability of medical technology – use of medical technology

**Number of CT scans (per 100 000 inhabitants)**



**MKD – number of scans in private CT units?**

SEEU-No data Albania, Greece

The most 17 484 (Turkey, 2x less CT scanners?)

The least 2 583 (Romania)

Average 7 955

EU

The most 20 766 (Luxembourg, Belgium, France)

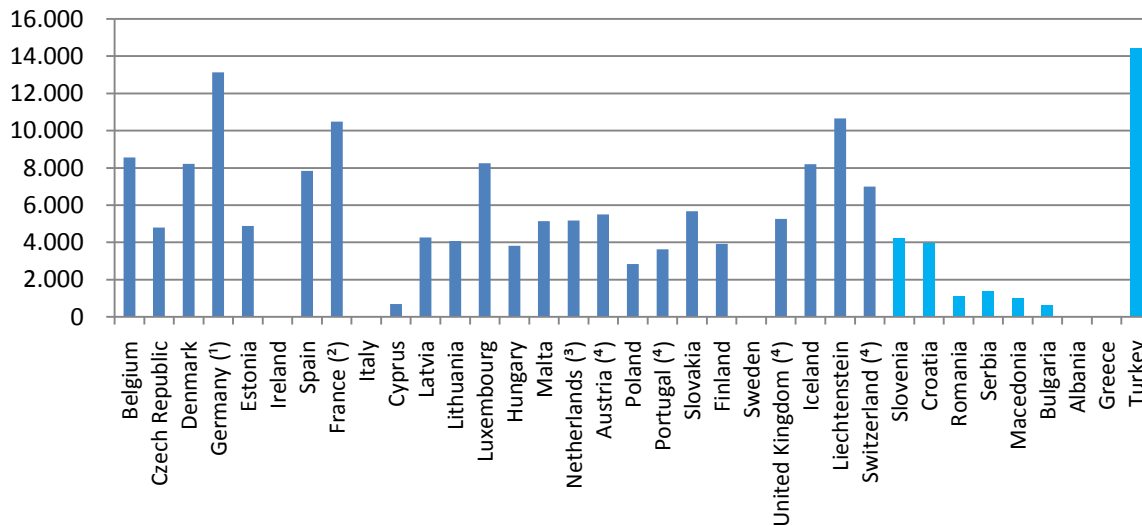
The least 3 416 (UK)

Average 12 825



# 1. Availability of medical technology – use of medical technology

Number of MRI scans (per 100 000 inhabitants)



MKD –  
number of  
scans in  
private  
MRI units?

SEEU-No data Albania, Greece

The most 14 429 (Turkey, 3x less MRI units?)

The least 633 (Bulgaria)

Average 3 820

EU

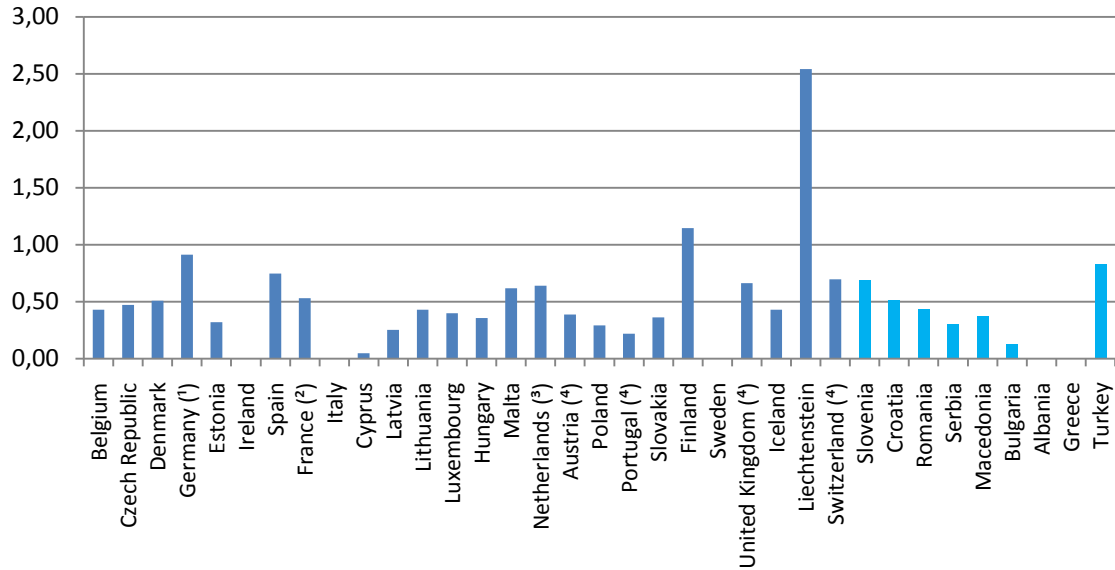
The most 13 135 (Germany)

The least 683; 380 (Cyprus, Portugal, Hungary, Finland)

Average 6 172

# 1. Availability of medical technology – use of medical technology

Number of MRI vs number of CT scans



3.07 times less MRI exams in clinical practice

SEEU No data Albania, Greece

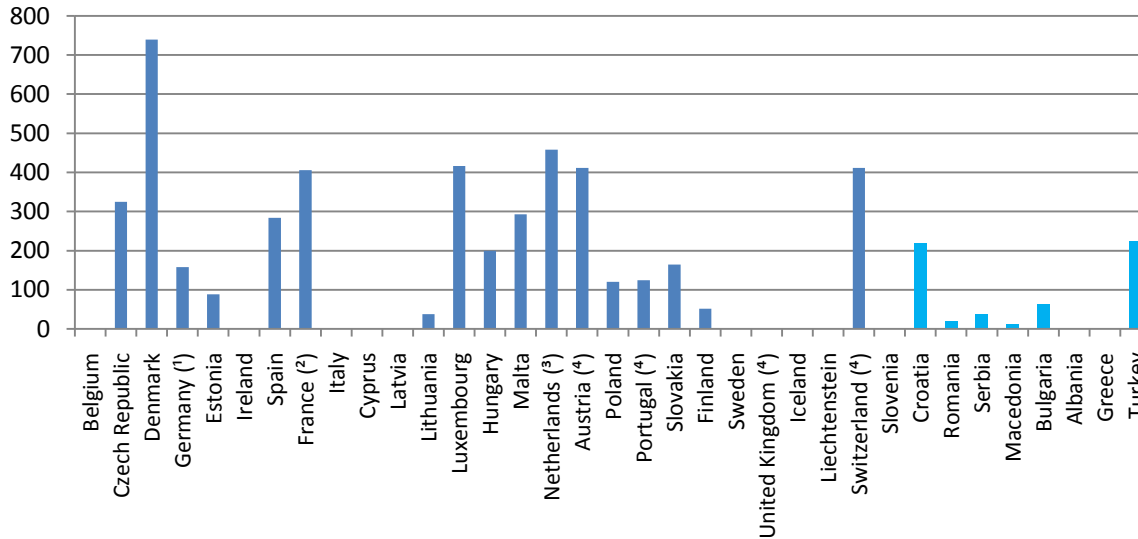
The highest ratio 0.83 (Turkey)  
 The lowest ratio 0.12 (Bulgaria)  
 0.38 (Macedonia)

EU

The highest ratio 2.54 (Liechtenstein, Finland, Germany)  
 The lowest ratio 0.05 (Cyprus)

# 1. Availability of medical technology – use of medical technology

**Number of PET scans (per 100 000 inhabitants)**



SEEU – No data Albania, Greece

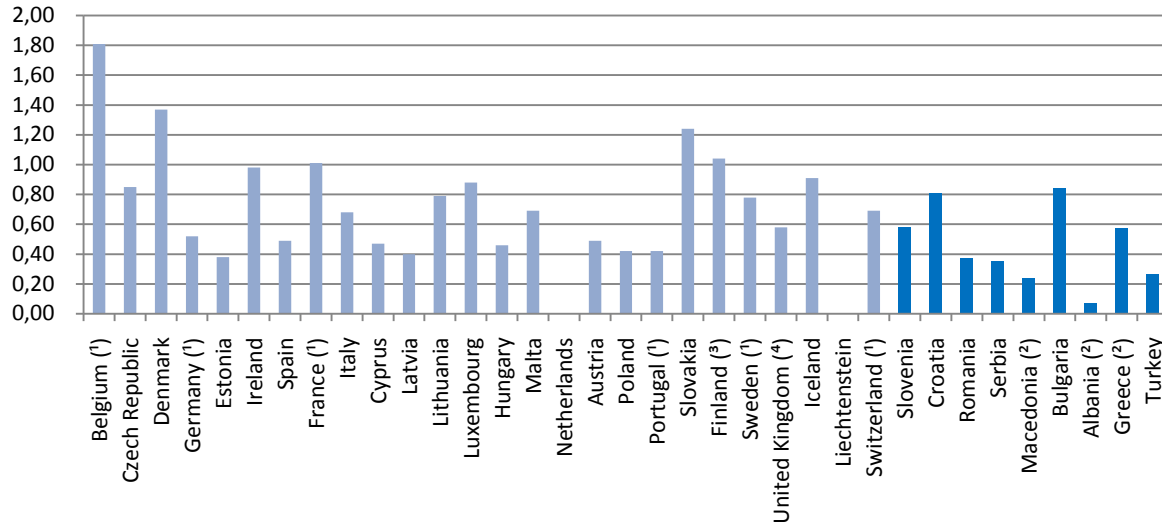
The most 225 (Turkey)  
 The least 12.5 (Macedonia, the most PET scanners?)  
 Average 141

EU - No data Belgium

The most 740 (Denmark)  
 The least 37 (Lithuania)  
 Average 276

## 2. Availability of medical technology - therapy equipment - 2015 (MK 2018)

**Radiation therapy equipment (per 100 000 inhabitants)**



SEEU

The most 0.84 (Bulgaria)

The least 0.07 (Albania)

Average 0.45

EU

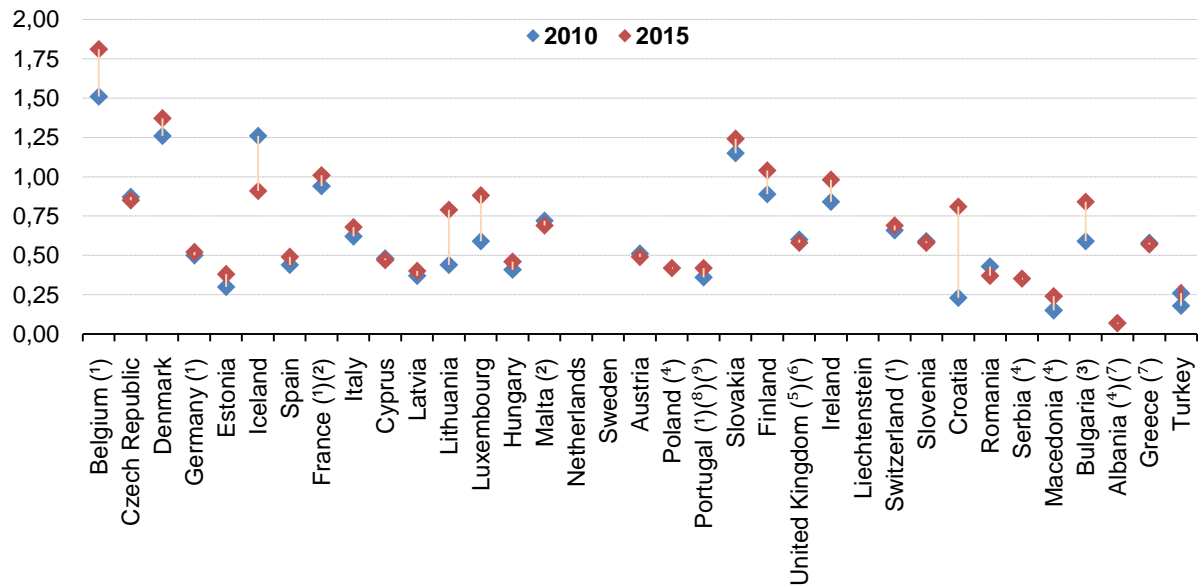
The most 1.81 (Belgium)

The least 0.38 (Estonia, Liechtenstein 0.00)

Average 0.73

38 % less

## 2. Availability of medical technology - therapy equipment - 2015 (MK 2018)

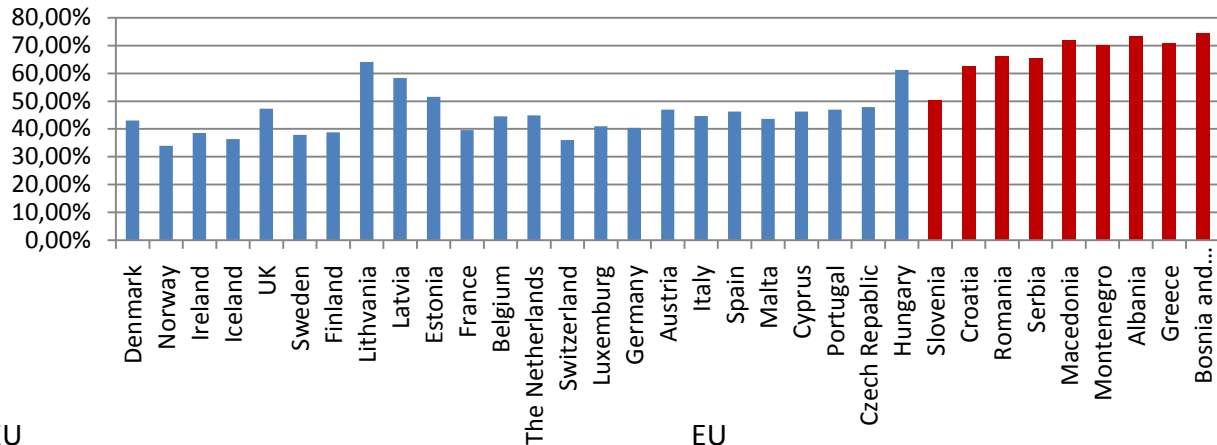


### 2010 – 2015 tendency

- ✓ The highest increasing in number of RTE - Croatia, Belgium, Lithuania, Bulgaria
- ✓ Decreasing of number of RTE - Germany, Switzerland (?)

### 3. Cancer statistics – mortality / incidence ratio (all cancers, excluded non-melanoma skin cancers)

**Mortality/Incidence Ratio – men**



SEEU

The highest 74 % (BIH, ALB, MKD, MNG, GR )

The lowest 50% (SLO)

EU

The highest 64% (Hungary, Lithuania)

The lowest 34% (Norway, Sweden, Switzerland)

- ✓ There is no cancer registry in the most of SEEU countries (very often heart - lung failure is declared as a cause of death in cancer patients);
- ✓ Less imaging and treatment equipment – only one factor for higher Mortality / Incidence ratio



## References:

[http://ec.europa.eu/eurostat/statistics-explained/index.php/Healthcare\\_resource\\_statistics\\_-\\_technical\\_resources\\_and\\_medical\\_technology#Availability\\_of\\_technical\\_resources\\_in\\_hospitals](http://ec.europa.eu/eurostat/statistics-explained/index.php/Healthcare_resource_statistics_-_technical_resources_and_medical_technology#Availability_of_technical_resources_in_hospitals)

[http://ec.europa.eu/eurostat/statistics-explained/index.php/Cancer\\_statistics](http://ec.europa.eu/eurostat/statistics-explained/index.php/Cancer_statistics)

J. Ferlay et al., Cancer incidence and mortality patterns in Europe: Estimates for 40 countries in 2012, European Journal of Cancer (2013) 49, 1374– 1403

*Thank you for your attention*