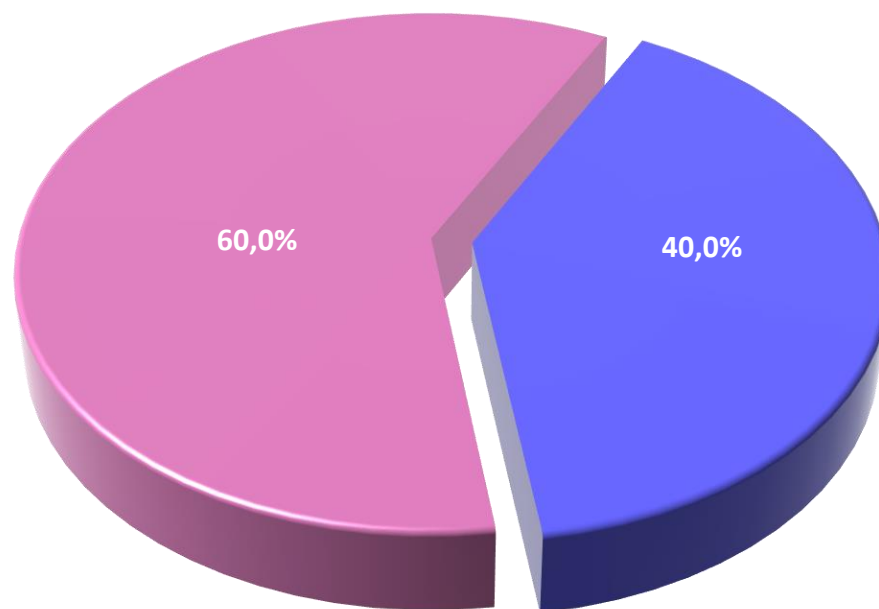


Broj i vrsta ispitanih izolata bakterija u periodu 01.01.2020 - 31.12.2020.

Vrsta bakterije	Broj primoizolata
<i>Acinetobacter</i> spp.	702
<i>E. faecalis</i>	312
<i>E. faecium</i>	276
<i>E. coli</i>	285
<i>K. pneumoniae</i>	387
<i>P. aeruginosa</i>	129
<i>S. aureus</i>	391
<i>S. pneumoniae</i>	27
<i>Salmonella</i> spp.	6
Ukupan br. izolata	2515

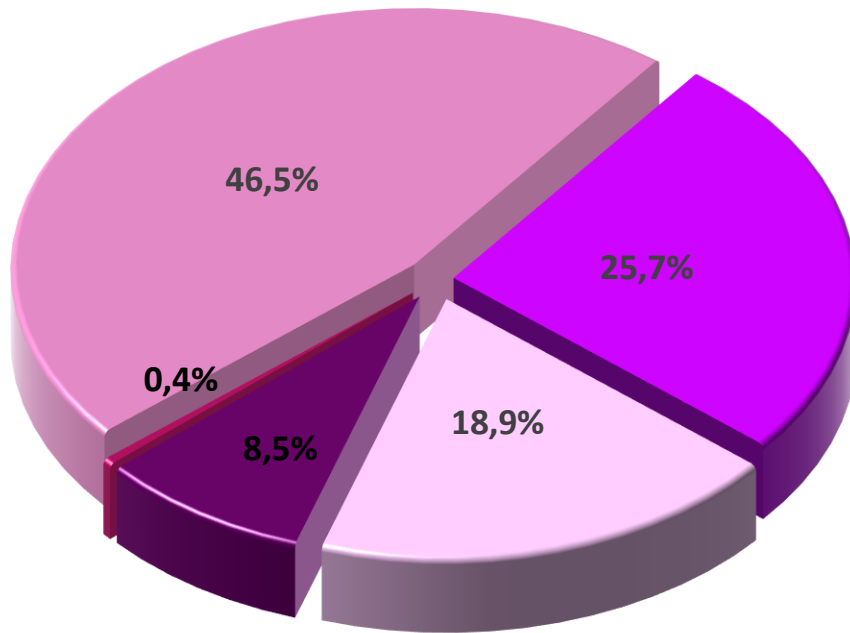


■ Gram-negativne bakterije ■ Gram-pozitivne bakterije

- Od ukupnog broja od **2515 primoizolata** invazivnih bakterija prijavljenih za 12 meseci
 - **1509 Gram-negativne**
 - **1006 Gram-pozitivne**

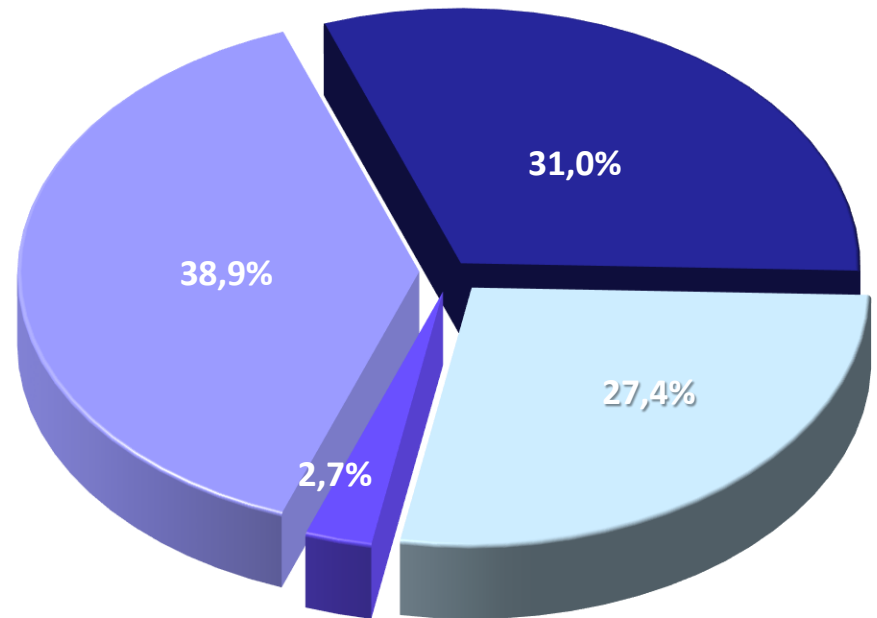
Invazivni izolati bakterija u Srbiji – distribucija vrsta

Gram-negativne bakterije (1509)



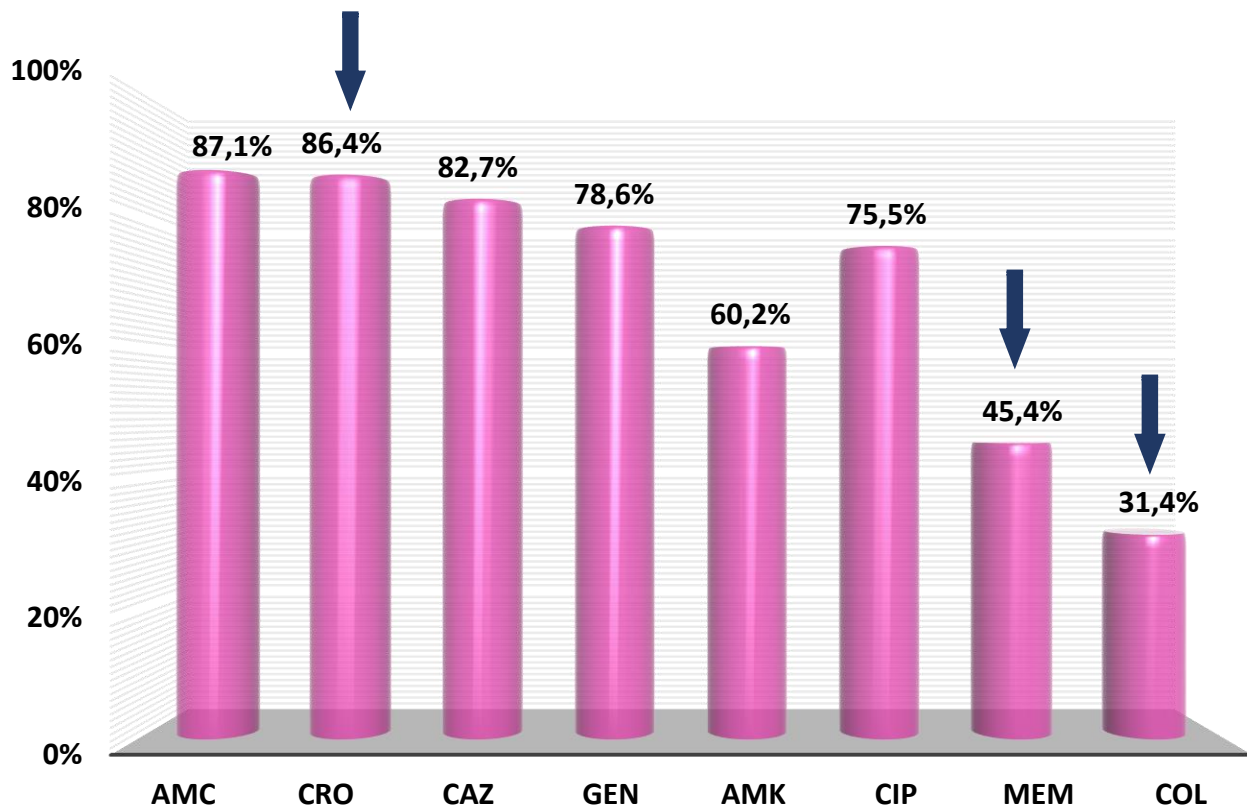
- Acinetobacter spp.
- E. coli
- Salmonella spp.
- K. pneumoniae
- P. aeruginosa

Gram-pozitivne bakterije (1006)



- S. aureus
- E. faecalis
- E. faecium
- S. pneumoniae

Klebsiella pneumoniae: rezistencija na antimikrobne lekove u Srbiji, 2020. godina



AMC	Amoksisilin / klavulanska kiselina
CRO	Ceftriakson
CAZ	Ceftazidim
GEN	Gentamicin
AMK	Amikacin
CIP	Ciprofloksacin
MEM	Meropenem
COL	Kolistin

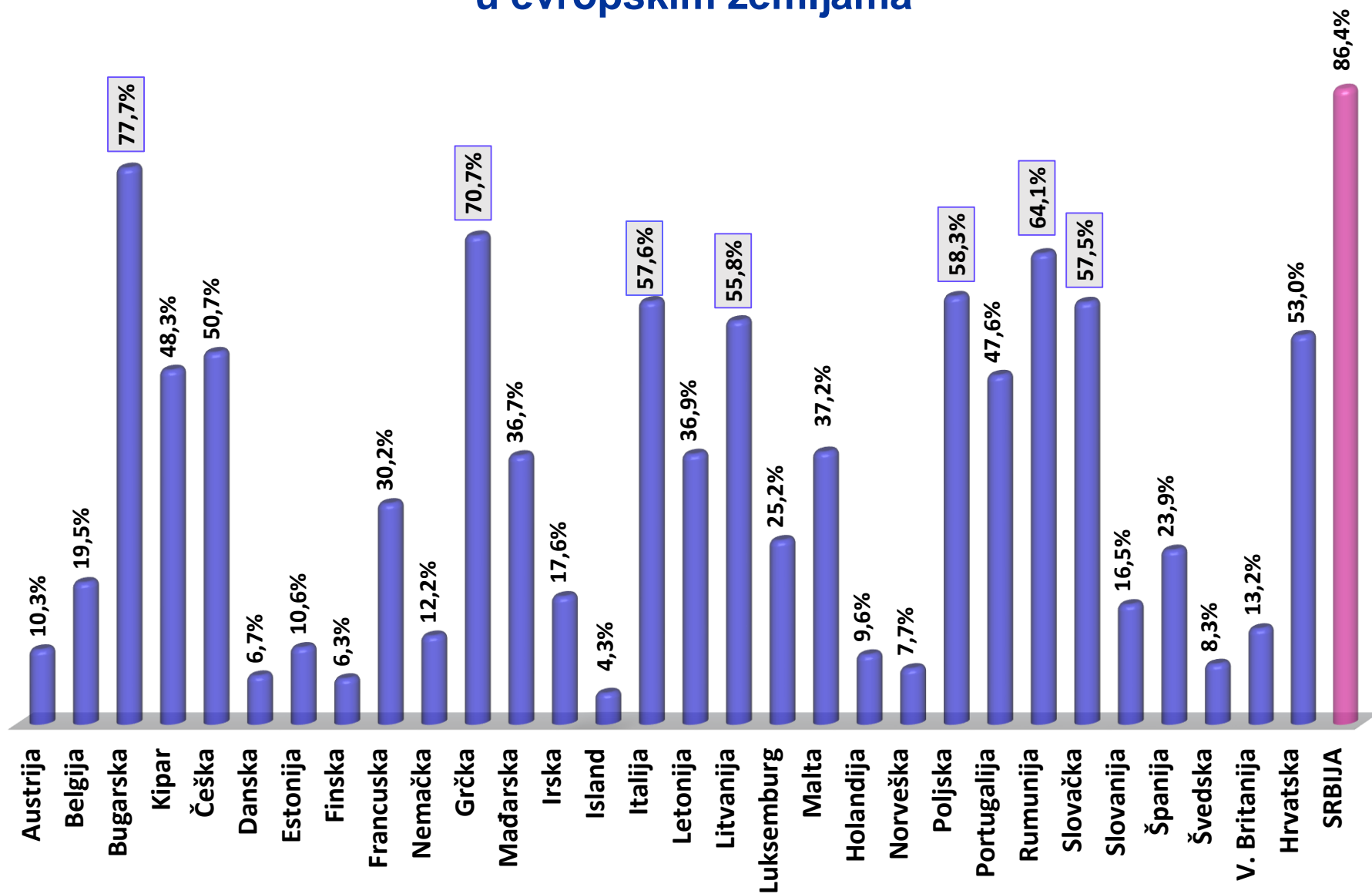
Broj izolata: 387 ↓

MEM R u 2016. godini 33,7%
 MEM R u 2017. godini 41,0%
 MEM R u 2018. godini 42,0%
 MEM R u 2019. godini 37,2%

ESBL 35,5%
 MDR 79,3%

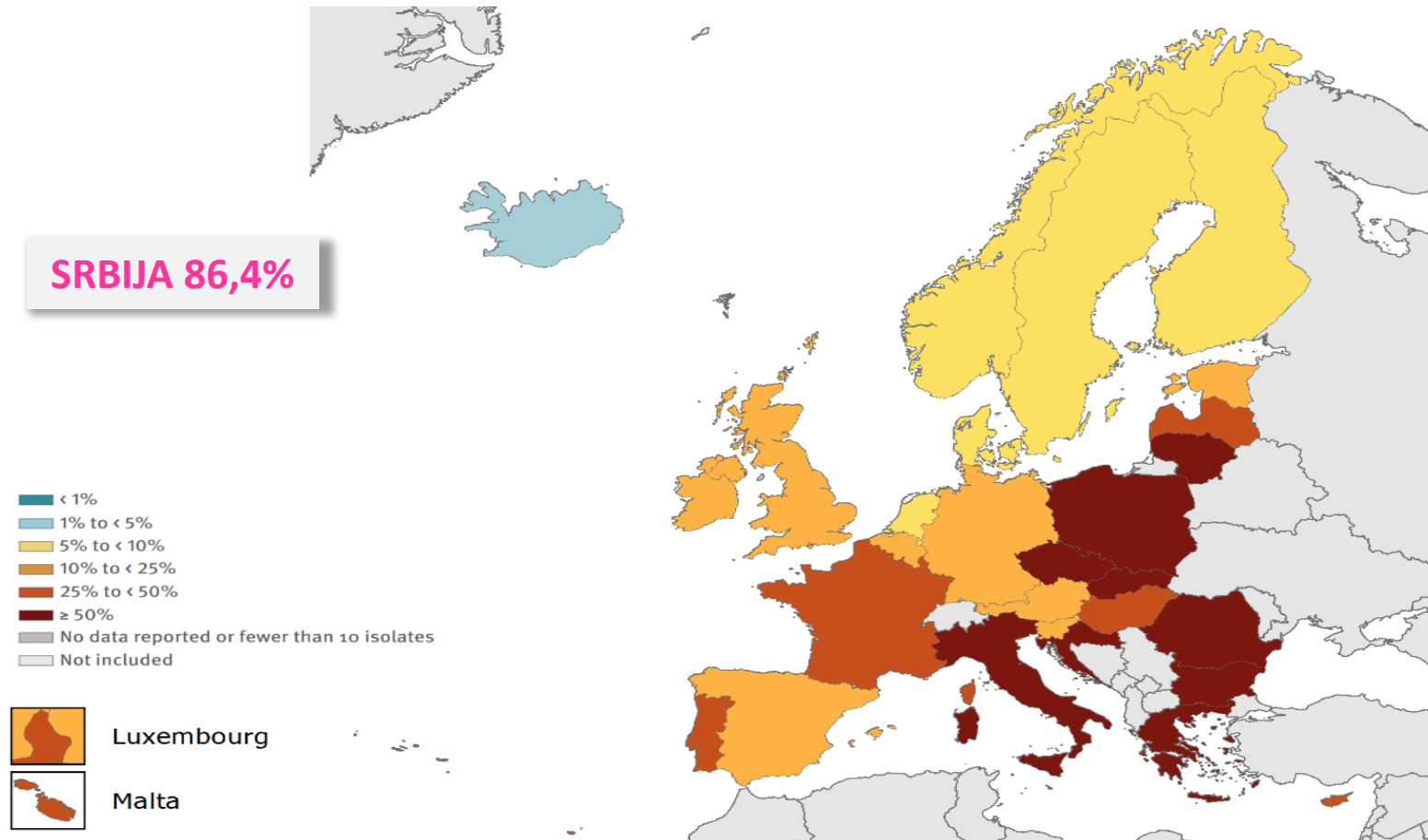
COL R u 2016. godini 24,3%
 COL R u 2017. godini 22,8%
 COL R u 2018. godini 26,3%
 COL R u 2019. godini 21,2%

Proporcija izolata *K. pneumoniae* rezistentnih na 3. gen. cefalosporina u evropskim zemljama



Klebsiella pneumoniae - procenat invazivnih izolata rezistentnih na III gen. cefalosporina, po zemljama EU/EEA

Figure 4. *Klebsiella pneumoniae*. Percentage of invasive isolates resistant to third-generation cephalosporins (cefotaxime or/and ceftriaxone or/and ceftazidime), by country, EU/EEA, 2019



Klebsiella pneumoniae – procenat izolata rezistentnih na 3. gen. cefalosporina u Evropskom regionu (EARS-Net i CAESAR)

ново

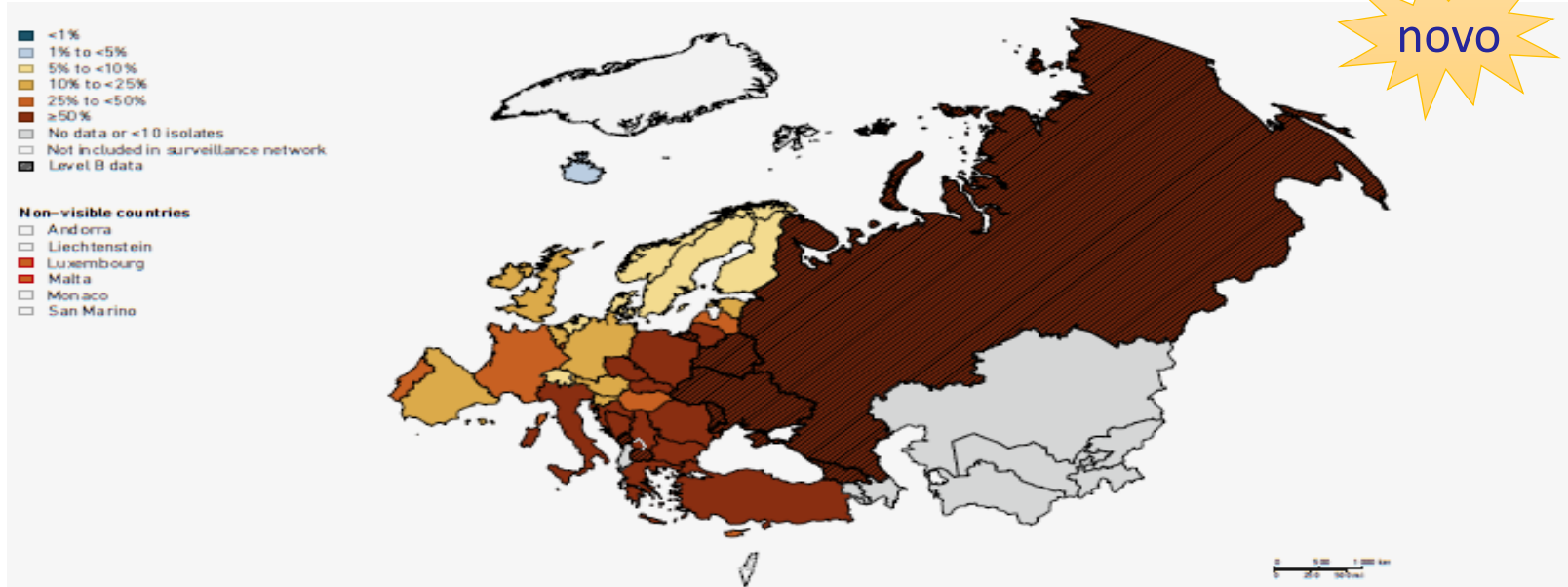
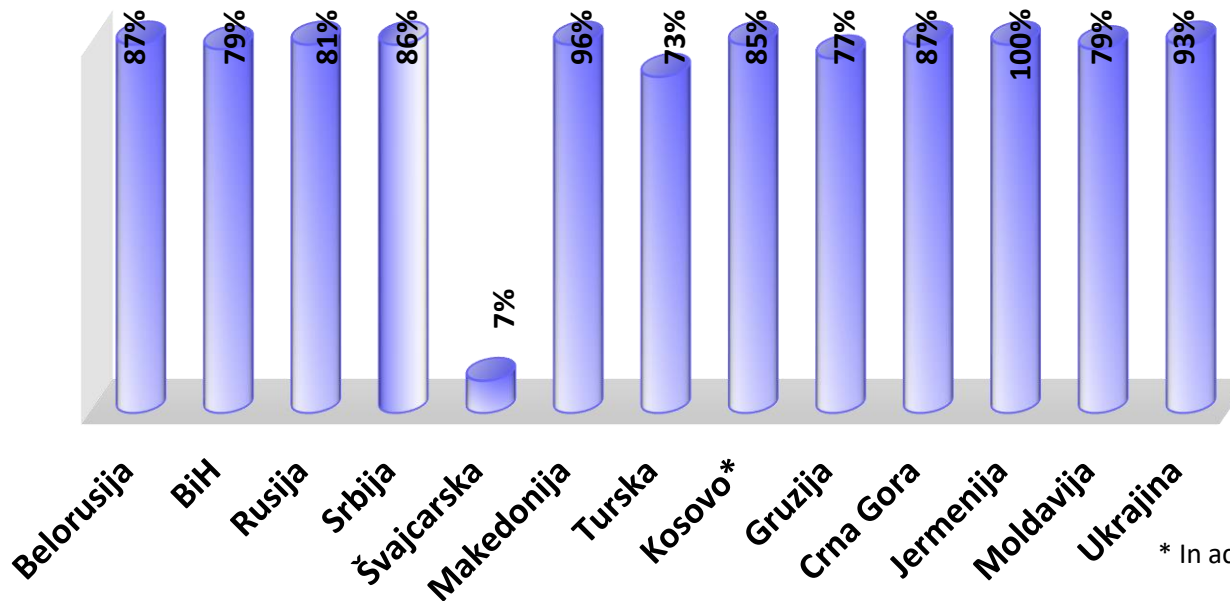


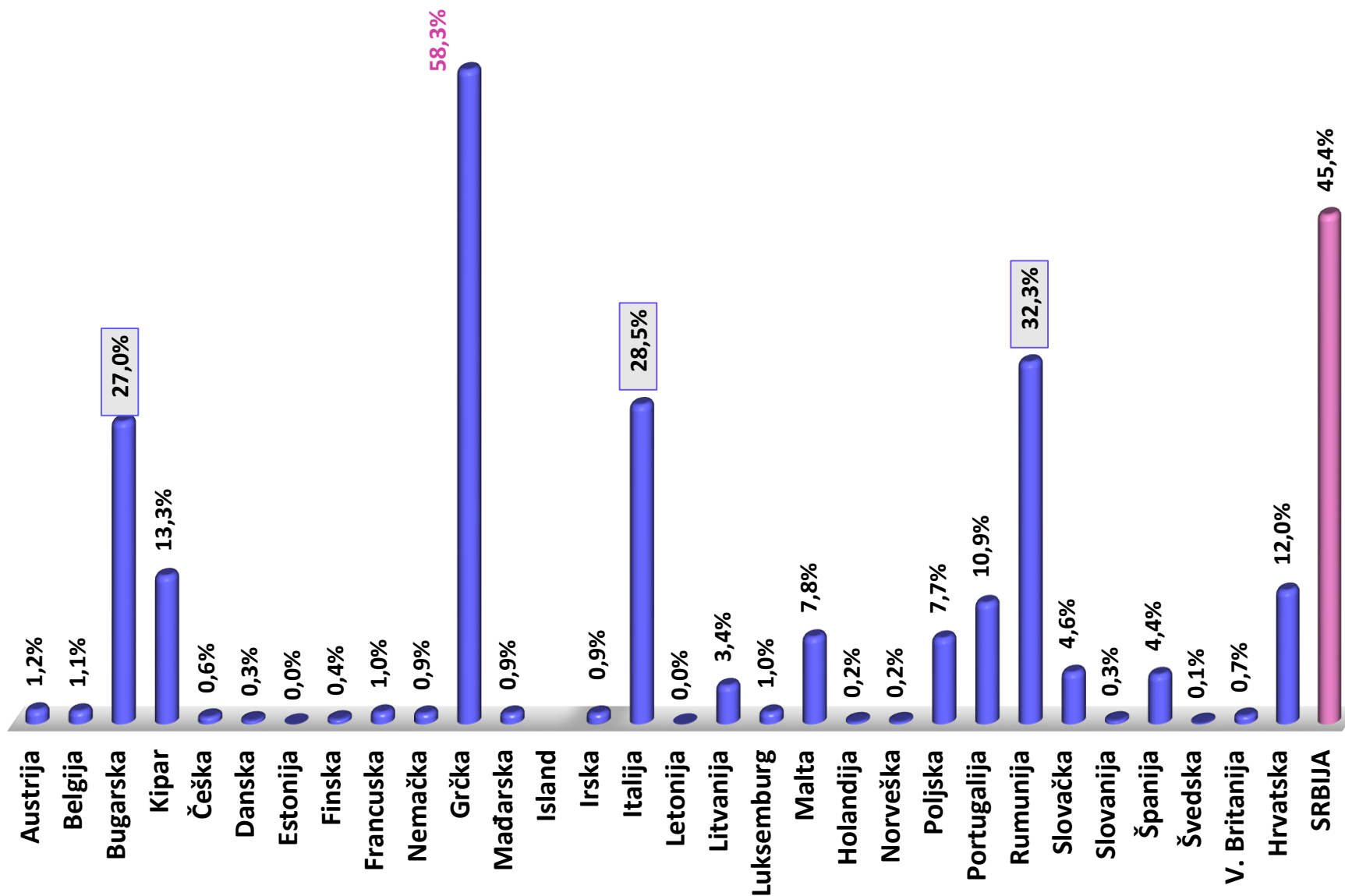
Fig. 2.4 Percentage of invasive *K. pneumoniae* isolates resistant to third-generation cephalosporins in the WHO European Region (EARS-Net and CAESAR), by country or area, 2019



Rezistencija na 3. gen. cefalosporina kod *K. pneumoniae* u svim ostalim zemljama CAESAR mreže izuzev Švajcarske je > 50%.

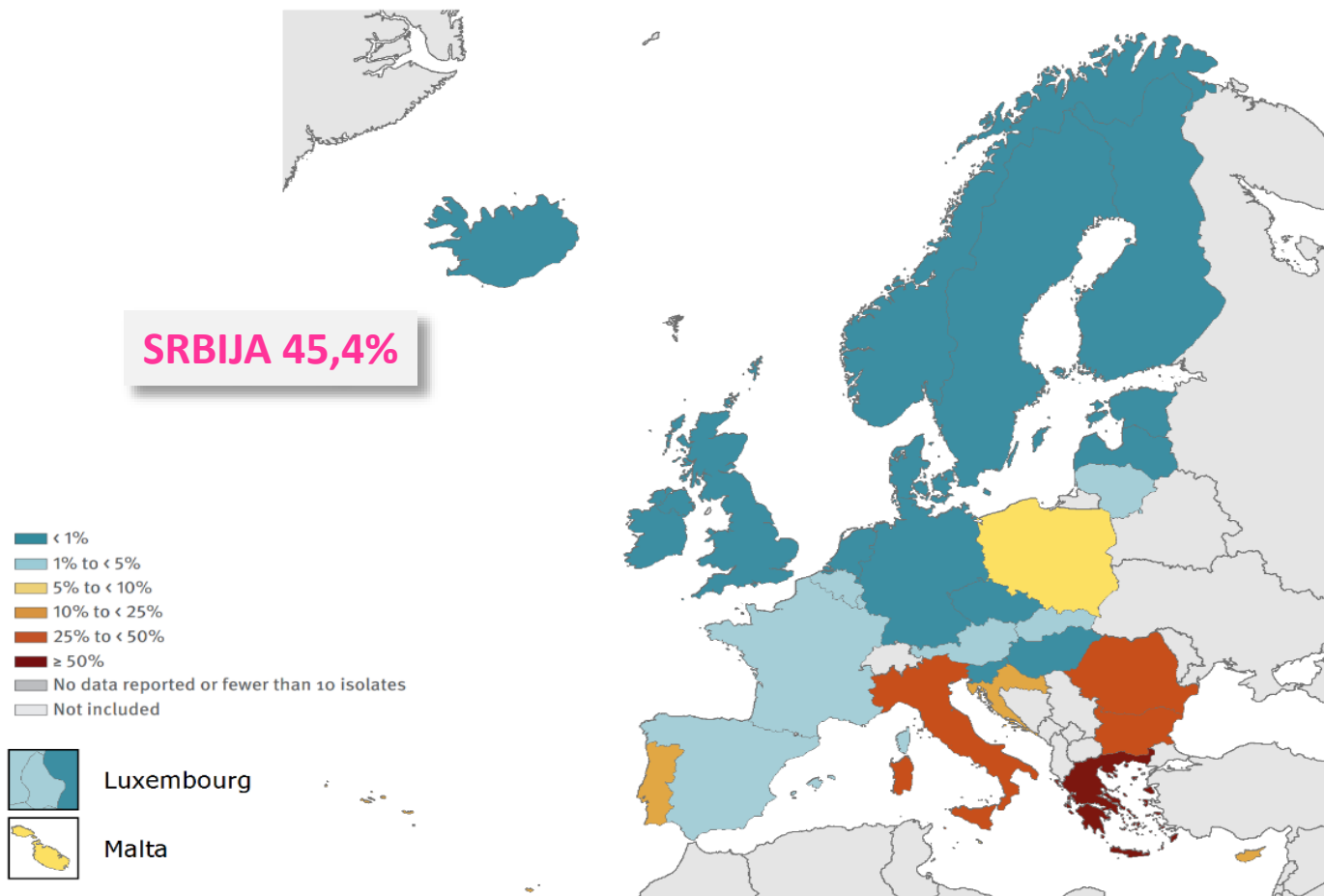
* In accordance with UNSC Resolution 1244 (1999)

Proporcija karbapenem – rezistentnih izolata *K. pneumoniae* u evropskim zemljama



Kelebsiella pneumoniae - procenat invazivnih izolata rzistentnih na karbapeneme, po zemljama EU/EEA

Figure 5. *Klebsiella pneumoniae*. Percentage of invasive isolates resistant to carbapenems (imipenem or/and meropenem), by country, EU/EEA, 2019



Klebsiella pneumoniae – procenat izolata rezistentnih na karbapeneme u Evropskom regionu (EARS-Net i CAESAR)

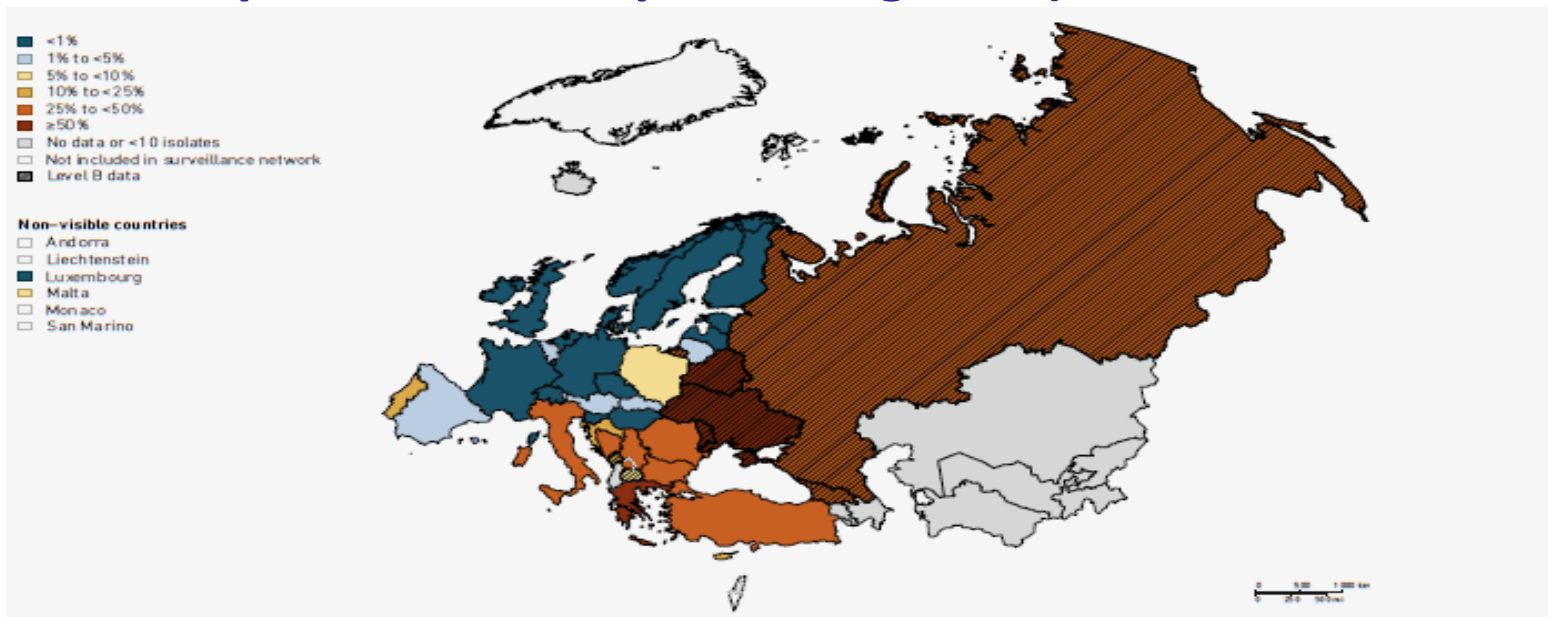
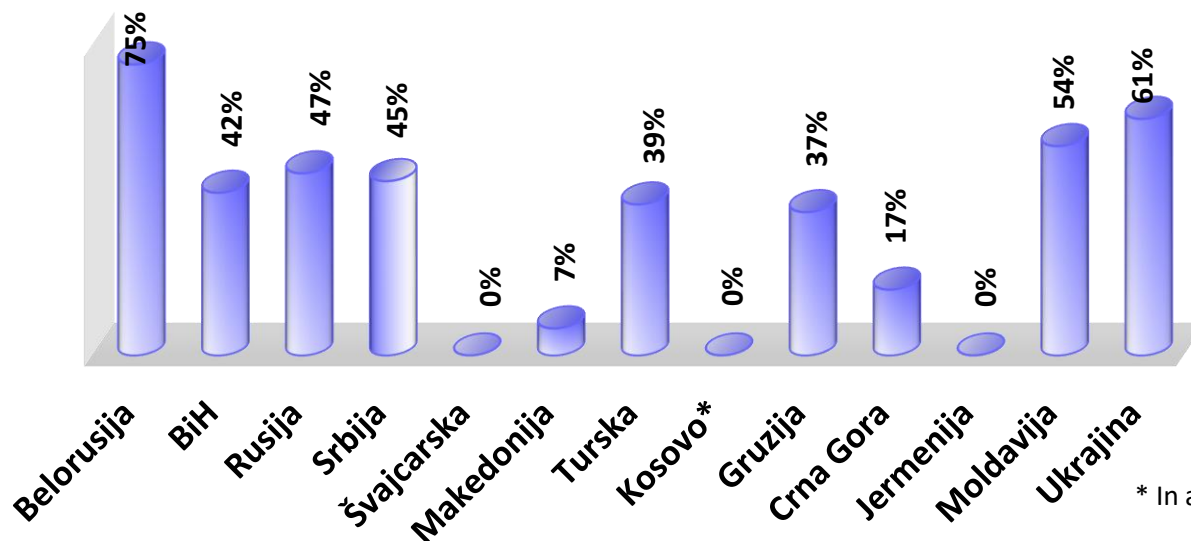


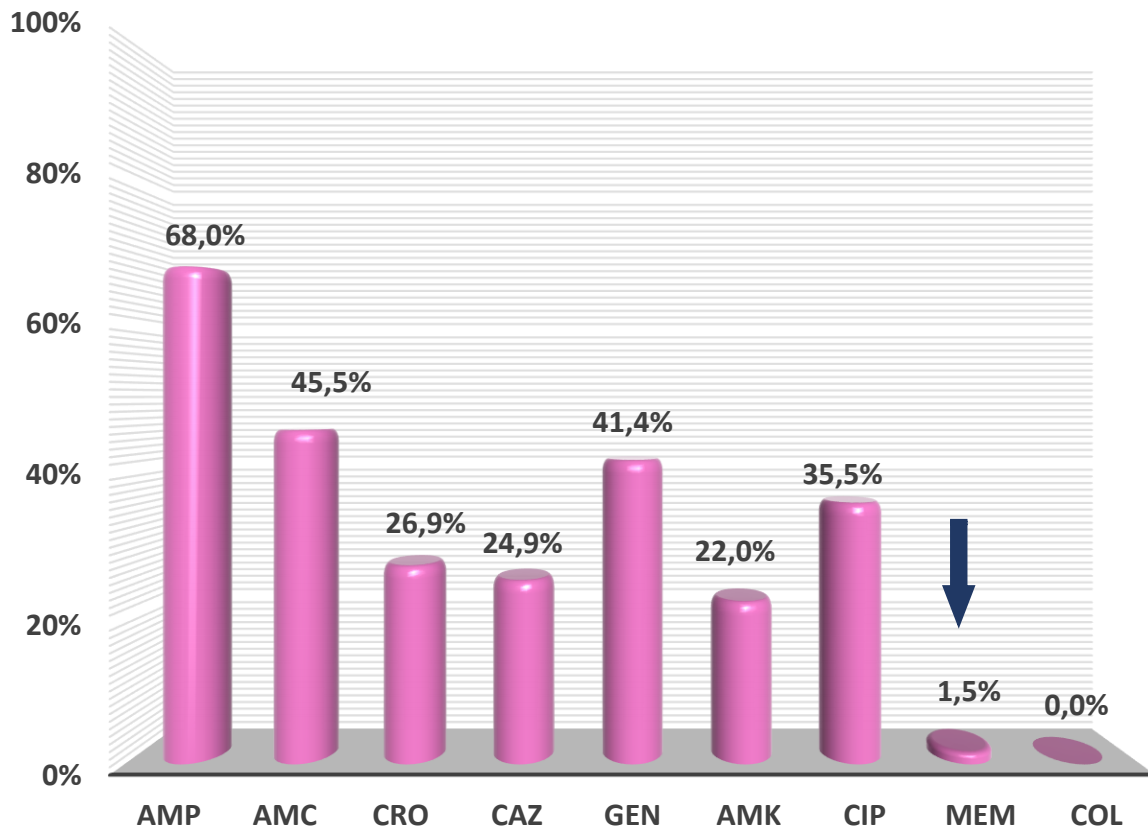
Fig. 2.5 Percentage of invasive *K. pneumoniae* isolates resistant to carbapenem Region (EARS-Net and CAESAR), by country or area, 2019



Rezistencija na karbapeneme kod *K. pneumoniae* u BiH, Rusiji, Turskoj, Gruziji, je > 25%, dok je u Belorusiji, Moldaviji i Ukrajini > 50%.

* In accordance with UNSC Resolution 1244 (1999)

Escherichia coli: rezistencija na antimikrobne lekove u Srbiji, 2020. godina



AMP	Ampicilin
AMC	Amoksicilin / klavulanska kiselina
CRO	Ceftriakson
CAZ	Ceftazidim
GEN	Gentamicin
AMK	Amikacin
CIP	Ciprofloksacin
MEM	Meropenem
COL	Kolistin

Broj izolata: 285 ↓

MEM R u 2016. godini 0,7%
MEM R u 2017. godini 1,5%

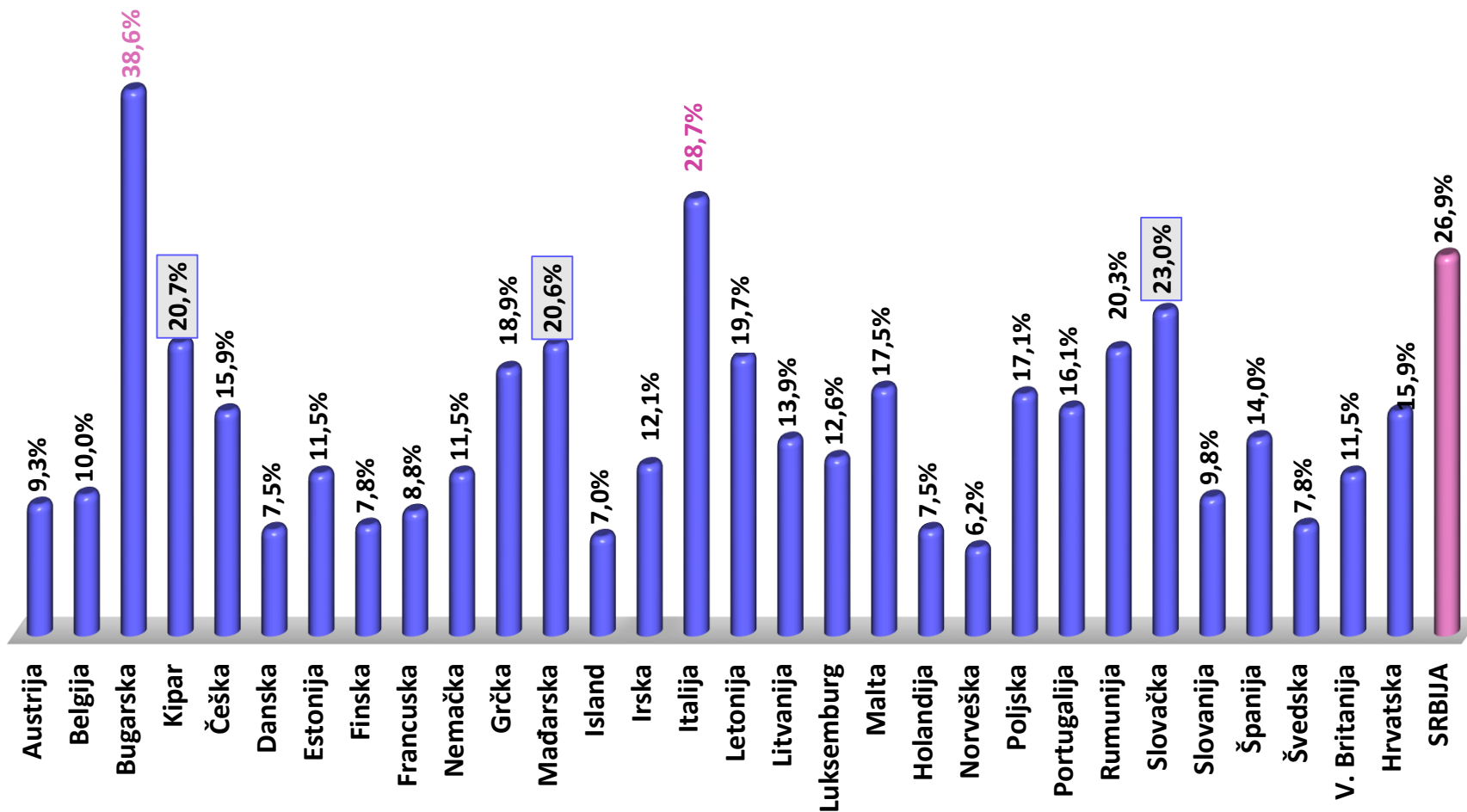
MEM R u 2018. godini 1,1%
MEM R u 2019. godini 0,2%

ESBL + 24,7%
MDR 31,9%

ESBL + 29,4% u 2016. godini
ESBL + 26,7% u 2017. godini

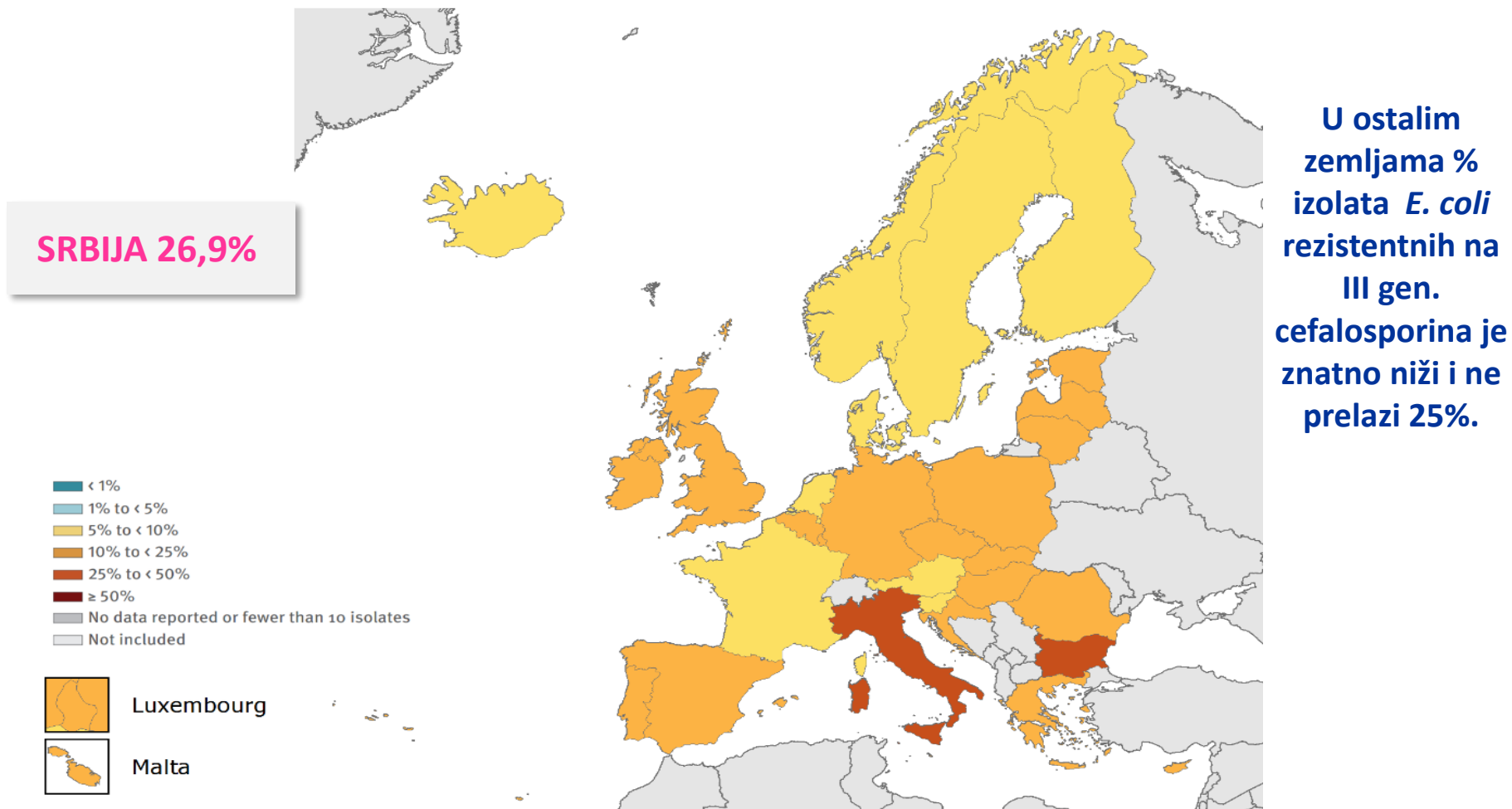
ESBL + 25,2% u 2018. godini
ESBL + 21,1% u 2019. godini

Proporcija izolata *E. coli* rezistentnih na 3. gen. cefalosporina u evropskim zemljama



Escherichia coli - procenat invazivnih izolata rezistentnih na III generaciju cefalosporina, po zemljama, EU/EEA

Figure 2. *Escherichia coli*. Percentage of invasive isolates resistant to third-generation cephalosporins (cefotaxime or/and ceftriaxone or/and ceftazidime), by country, EU/EEA, 2019



E. coli - procenat izolata rezistentnih na 3. gen. cefalosporina u Evropskom regionu (EARS-Net i CAESAR)

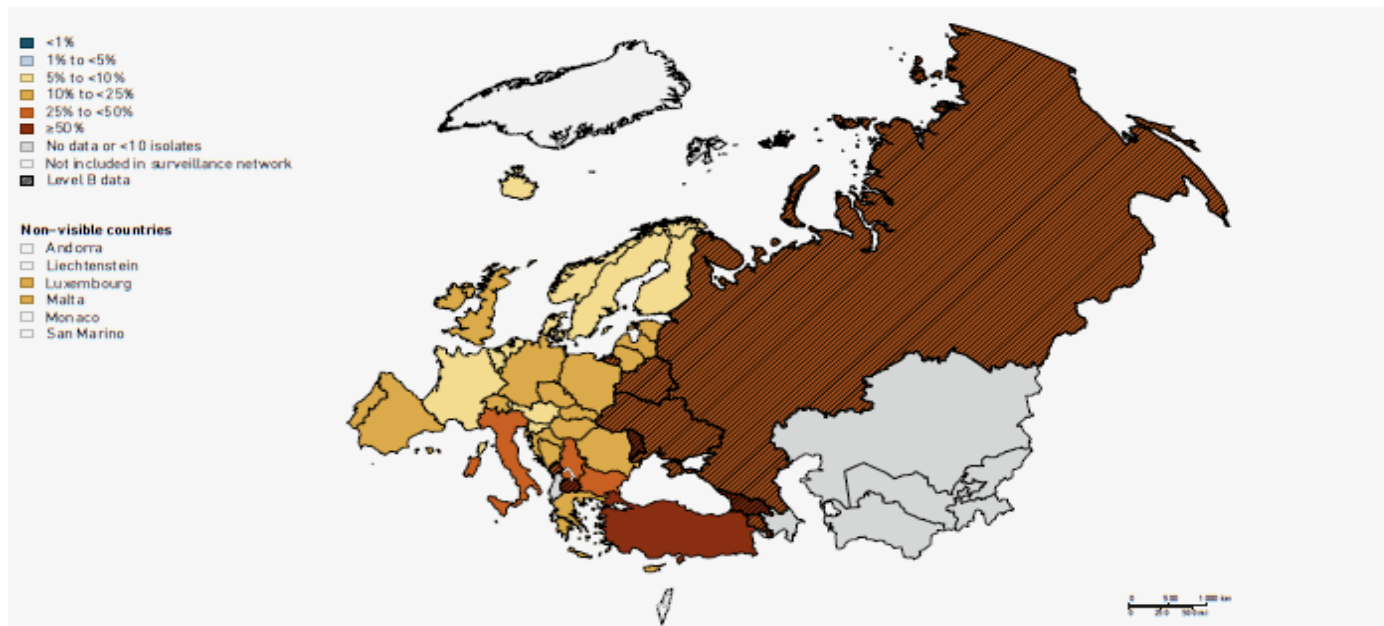
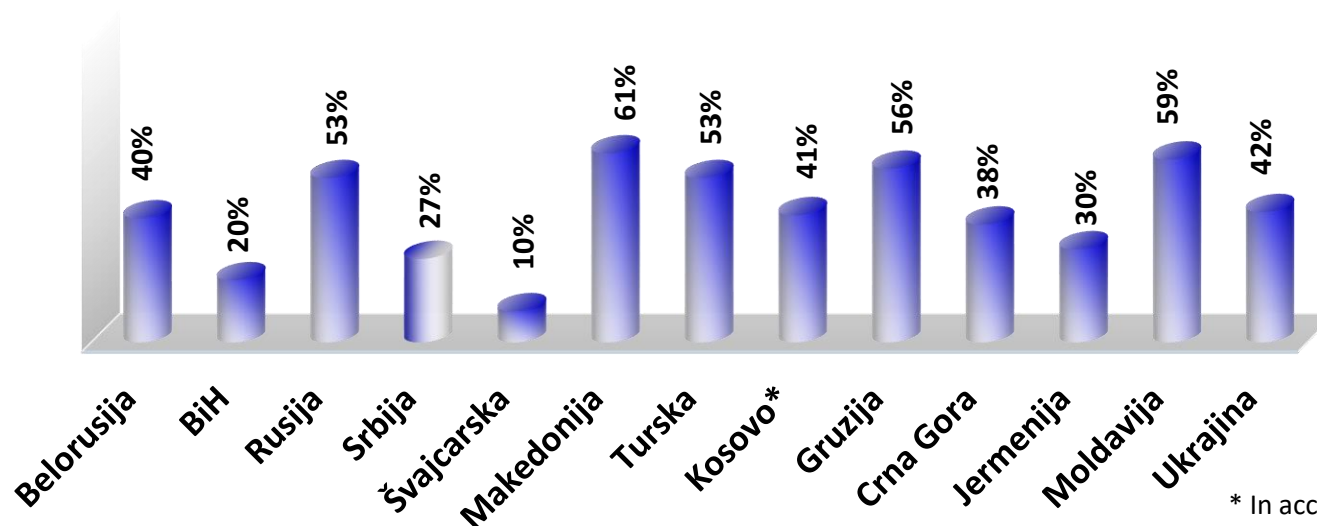


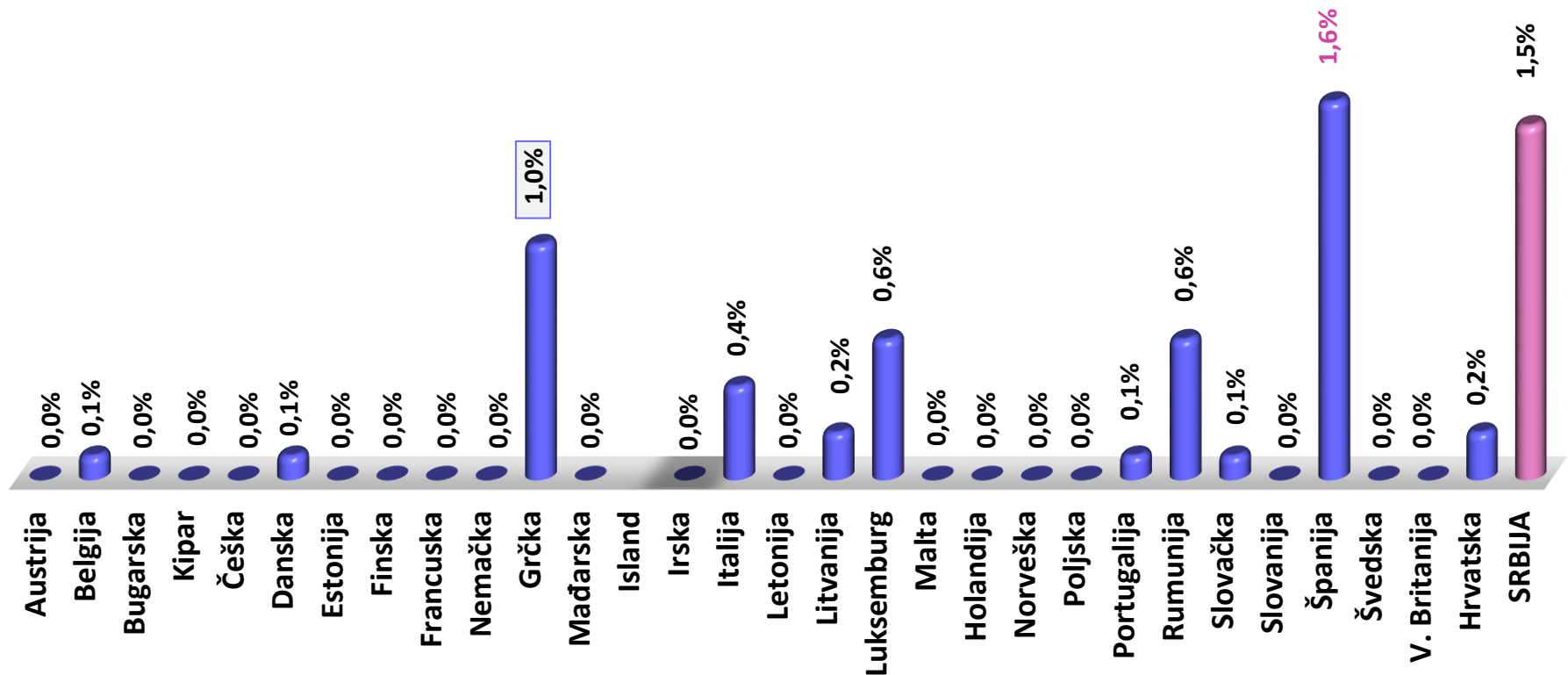
Fig. 2.2 Percentage of invasive *E. coli* isolates resistant to third-generation cephalosporins by country or area, 2019
European Region (EARS-Net and CAESAR)

Među zemljama CAESAR mreže Rusija, Makedonija, Turska, Gruzija, i Moldavija beleže rezistenciju >50%, dok je u BiH rezistencija slična kao u Srbiji, dok je u Švajcarskoj najniža i iznosi samo 10%.



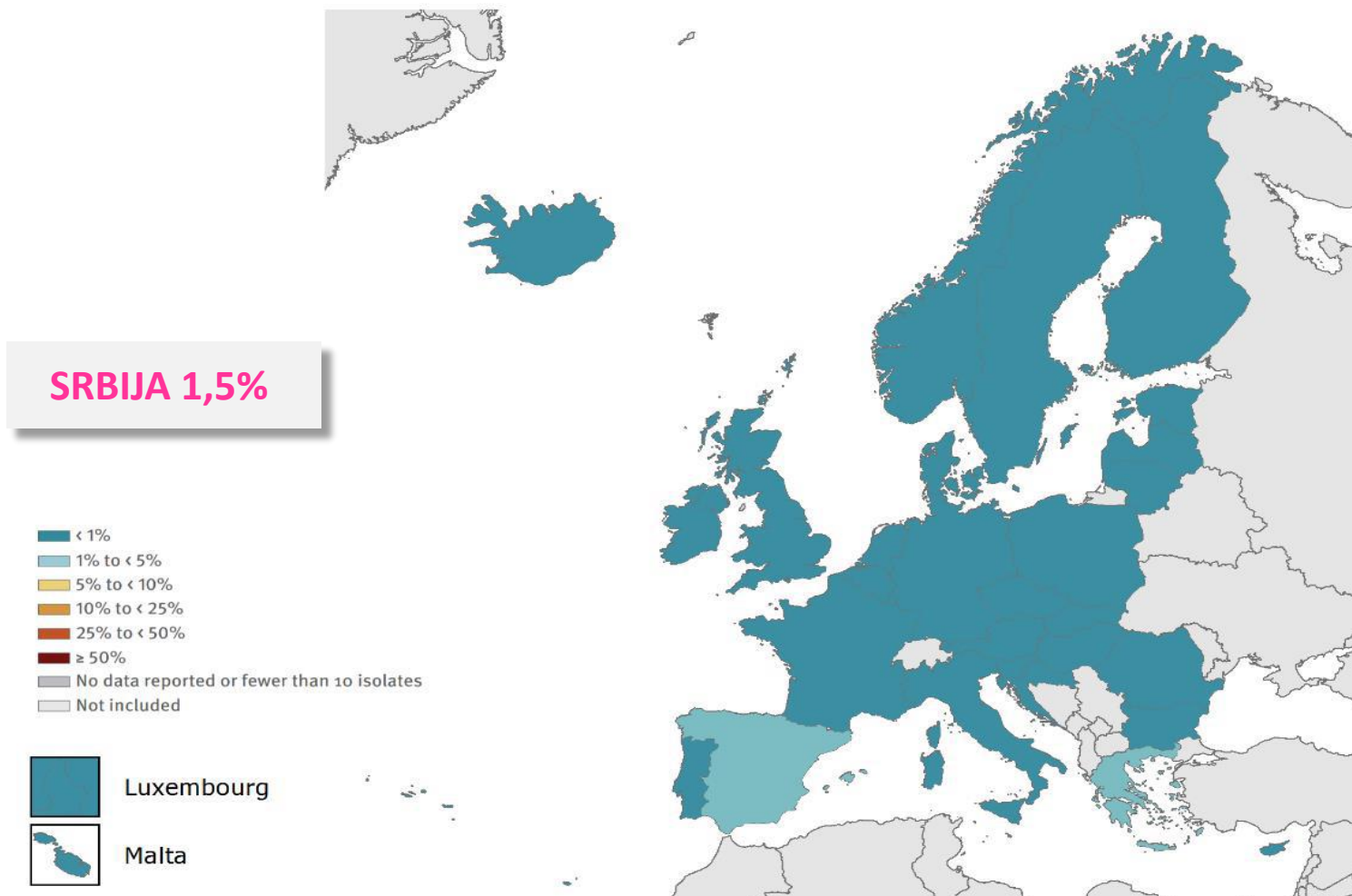
* In accordance with UNSC Resolution 1244 (1999)

Proporcija karbapenem-rezistentnih izolata *E. coli* u evropskim zemljama



Escherichia coli - procenat invazivnih izolata rezistentnih na karbapeneme, po zemljama, EU/EEA

Figure 3. *Escherichia coli*. Percentage of invasive isolates resistant to carbapenems (imipenem or/and meropenem), by country, EU/EEA, 2019



E. coli – procenat izolata rezistentnih na karbapeneme u Evropskom regionu (EARS-Net i CAESAR)

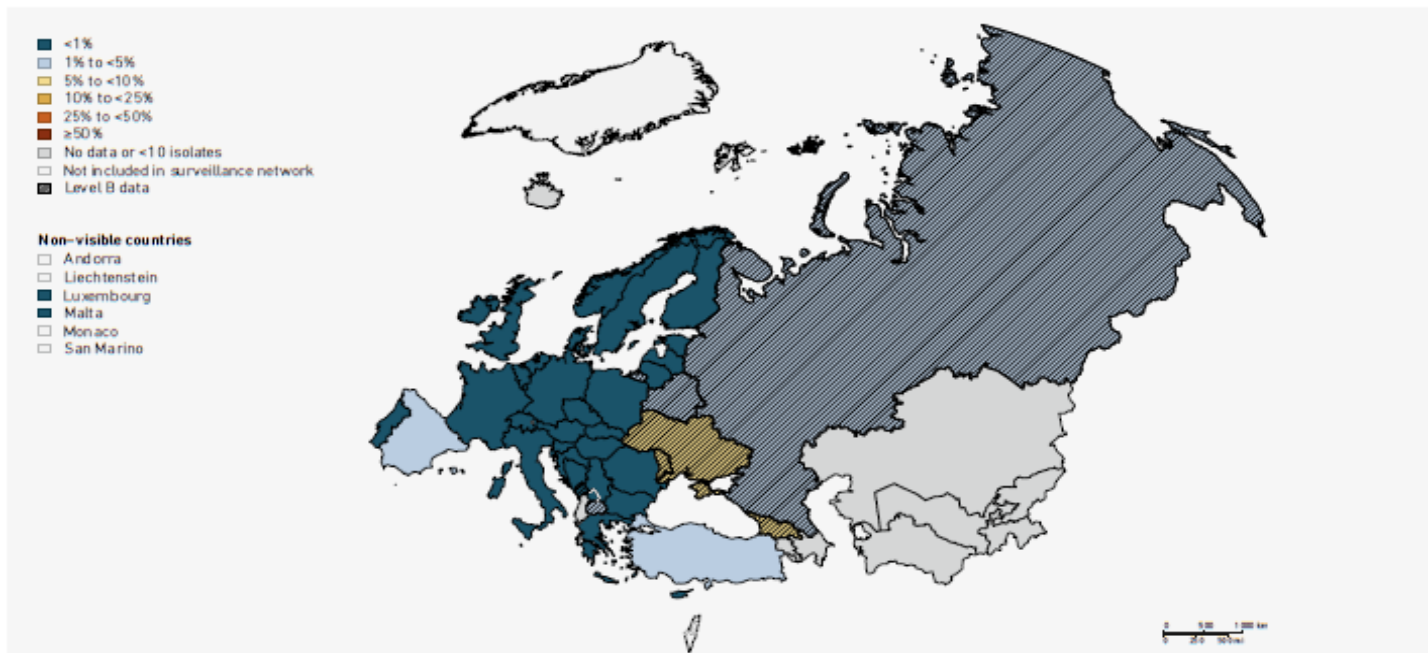
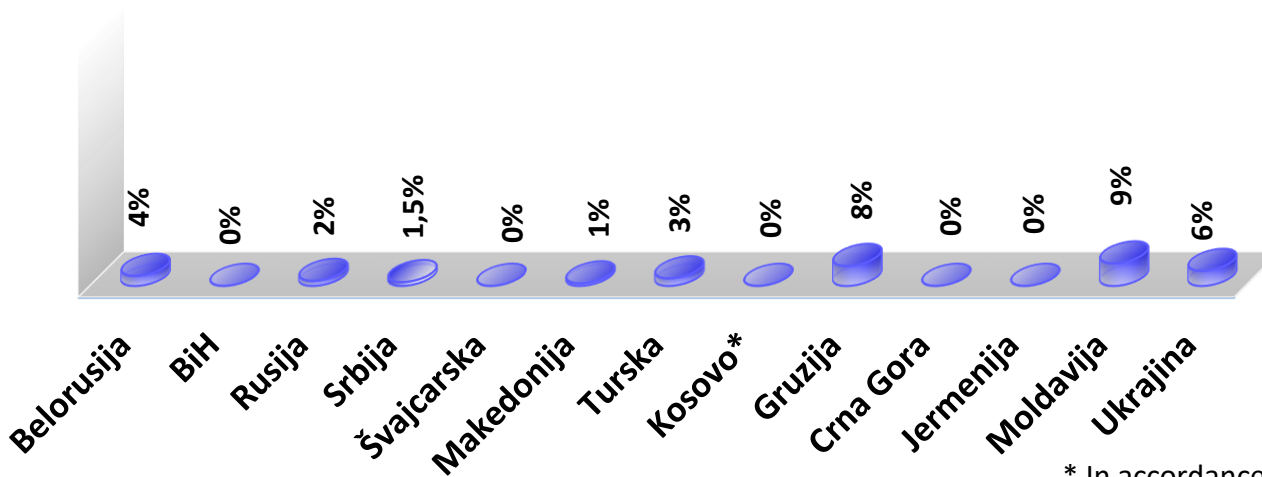


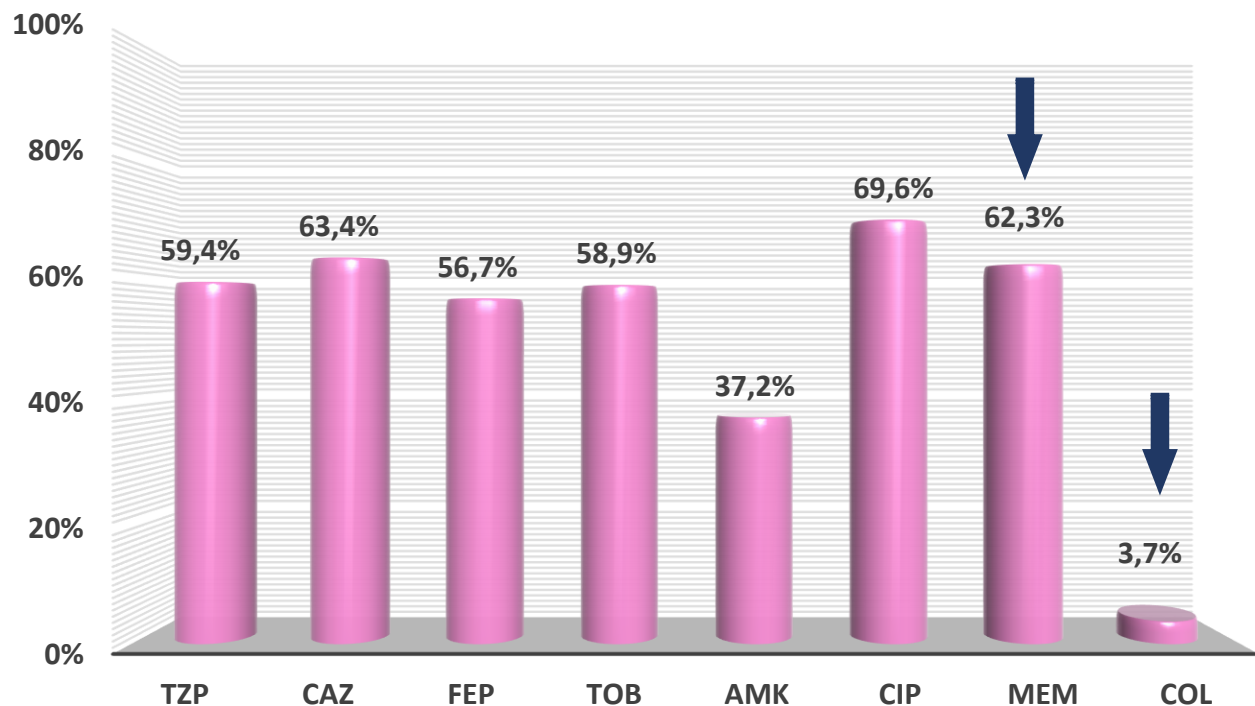
Fig. 2.3 Percentage of invasive *E. coli* isolates resistant to carbapenems in the EARS-Net and CAESAR, by country or area, 2019



* In accordance with UNSC Resolution 1244 (1999)

Među većinom zemalja CAESAR mreže zabeležena je rezistencija od 0-4%, za razliku od Ukrajine, Gruzije i Moldavije gde je zabeležena visoka rezistencija od 6-9%.

Pseudomonas aeruginosa: rezistencija na antimikrobne lekove u Srbiji, 2020. godina



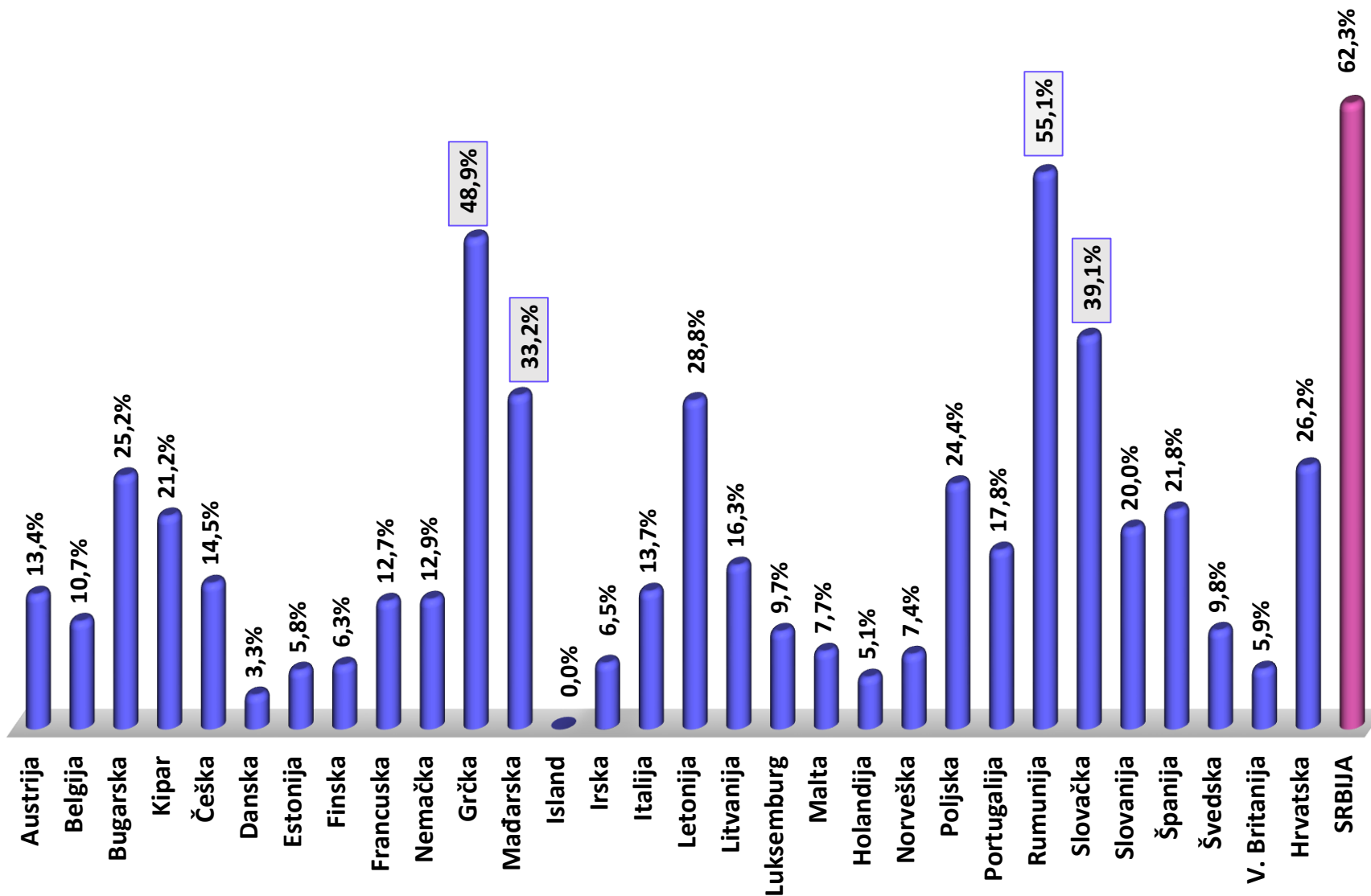
TZP	Piperacilin/ Tazobaktam
CAZ	Ceftazidim
FEP	Cefepim
TOB	Tobramicin
AMK	Amikacin
CIP	Ciprofloksacin
MEM	Meropenem
COL	Kolistin

Broj izolata: 129 ↓

MEM R u 2016. godini 41,1%
MEM R u 2017. godini 53,5%
MEM R u 2018. godini 58,1%
MEM R u 2019. godini 55,1%

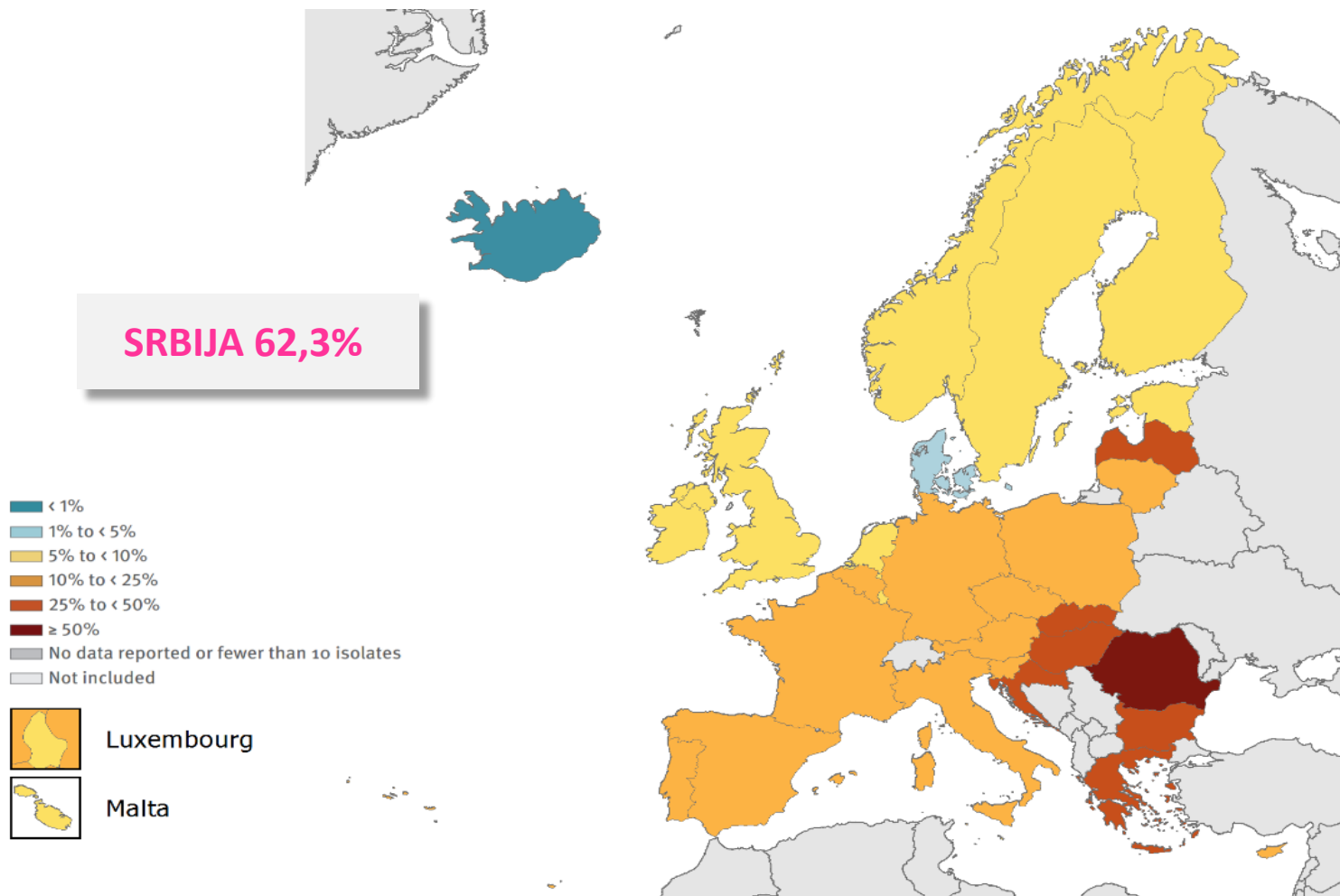
MDR 100%

Proporcija izolata *Pseudomonas aeruginosa* rezistentnih na karbapeneme u evropskim zemljama

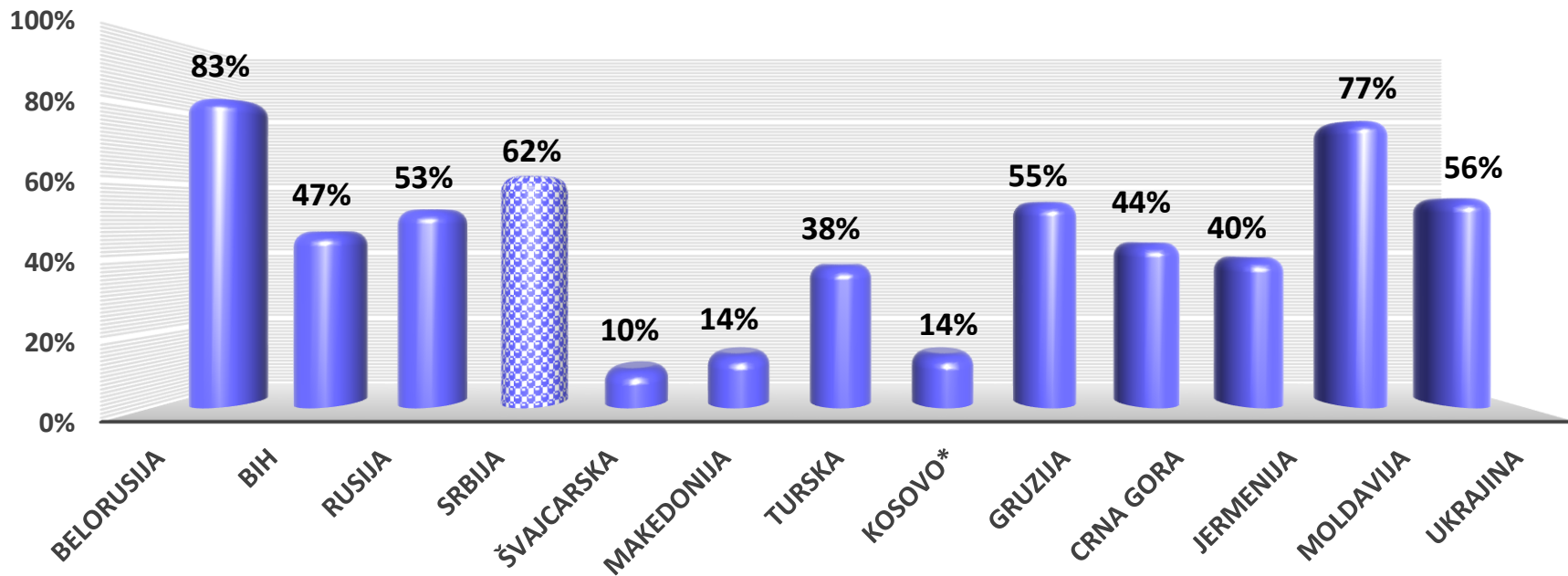
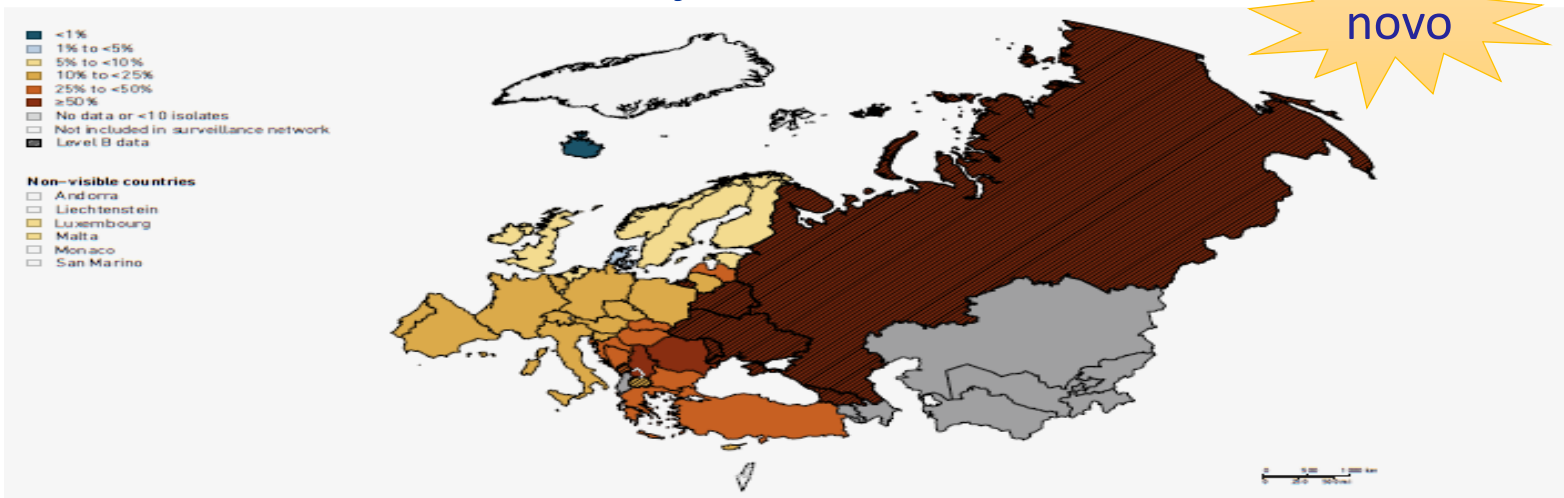


Pseudomonas aeruginosa - procenat invazivnih izolata rezistentnih na karbapeneme, po zemljama, EU/EEA

Figure 6. *Pseudomonas aeruginosa*. Percentage of invasive isolates with resistance to carbapenems (imipenem or/and meropenem), by country, EU/EEA, 2019

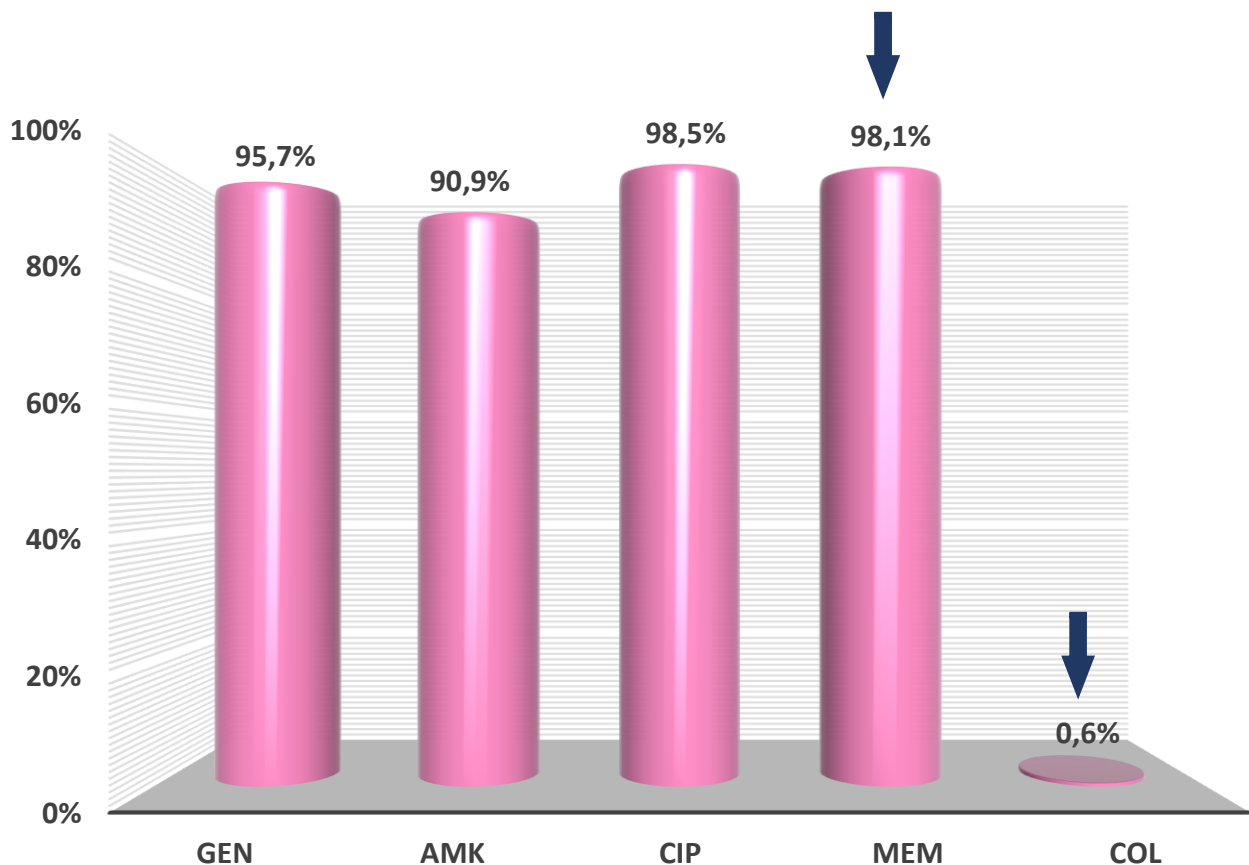


Procenat izolata *Pseudomonas aeruginosa* rezistentnih na karbapeneme po zemljama CAESAR mreže



* In accordance with UNSC Resolution 1244 (1999)

Acinetobacter spp.: rezistencija na antimikrobne lekove u Srbiji, 2020. godina



GEN	Gentamicin
AMK	Amikacin
CIP	Ciprofloksacin
MEM	Meropenem
COL	Kolistin

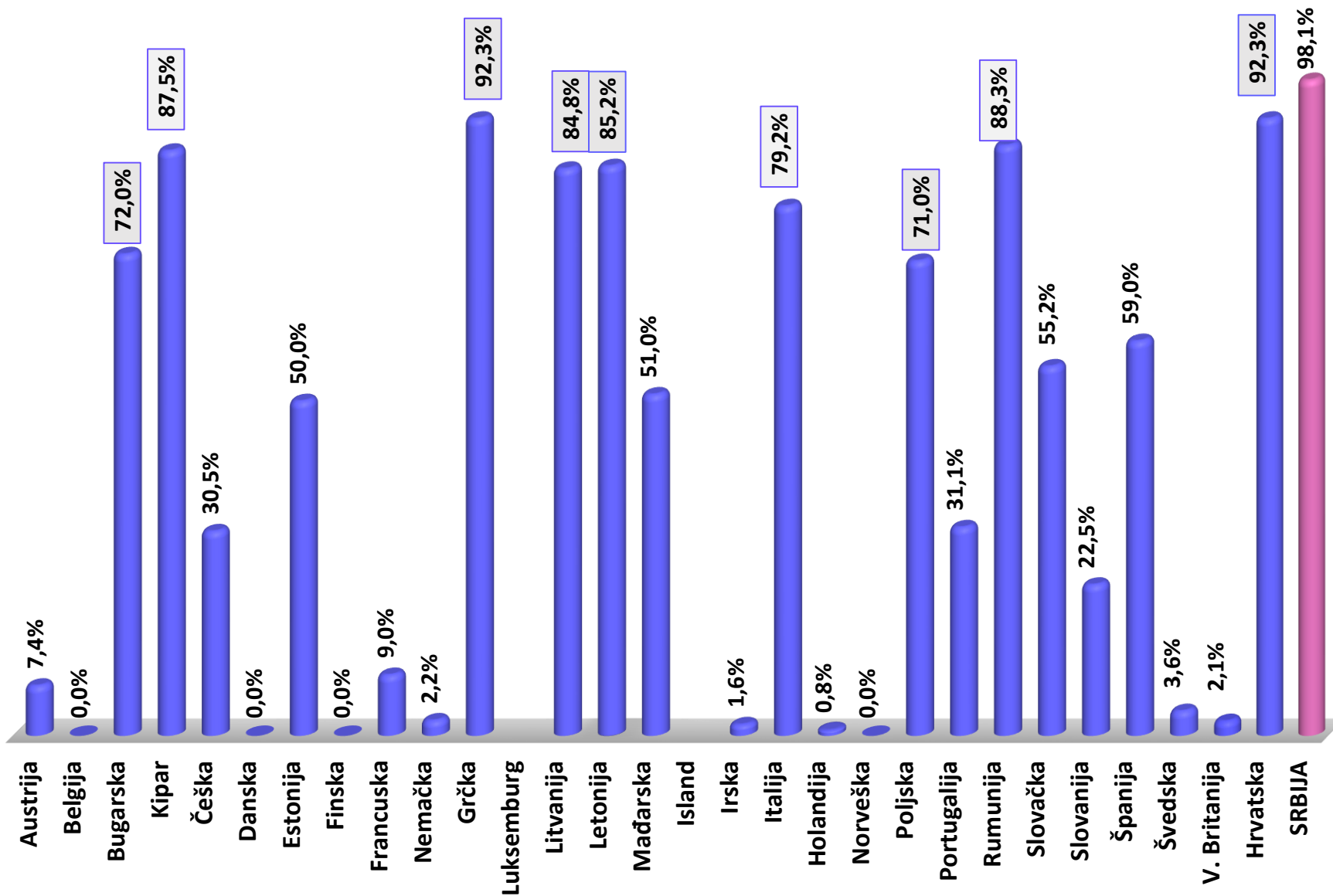
Broj izolata: 702 ↑

MEM R u 2016. godini 96,2%
MEM R u 2017. godini 95,3%
MEM R u 2018. godini 95,7%
MEM R u 2019. godini 95,8%

MDR 92%

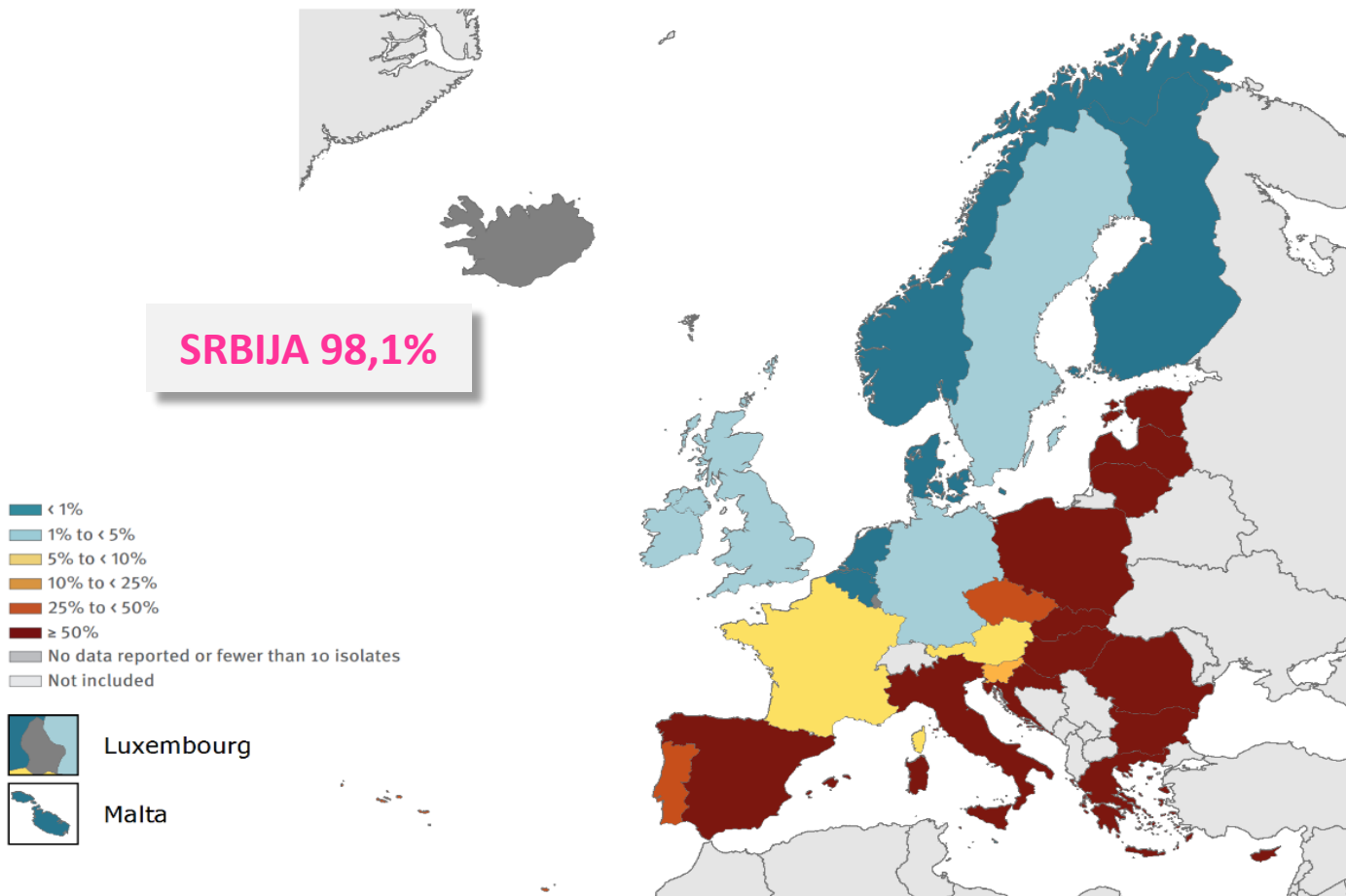
COL R u 2016. godini 0,7%
COL R u 2017. godini 1,5%
COL R u 2018. godini 0,9%
COL R u 2019. godini 0,8%

Proporcija izolata *Acinetobacter* spp. rezistentnih na karbapeneme u evropskim zemljama



Acinetobacter spp. - procenat invazivnih izolata rezistentnih na karbapeneme, po zemljama, EU/EEA

Figure 7. Acinetobacter species. Percentage of invasive isolates with resistance to carbapenems (imipenem or/and meropenem), by country, EU/EEA, 2019



U Skandinavskim zemljama, Velikoj Britaniji, Irskoj, Belgiji, Danskoj, Nemačkoj, Holandiji procenat ovih izolata je manji od 5%, dok je u Austriji, Francuskoj i Sloveniji od 5% do 25%. U Češkoj i Portugaliji rezistencija je između 25-50%.

Procenat izolata *Acinetobacter* spp. rezistentnih na karbapeneme po zemljama CAESAR mreže

ново

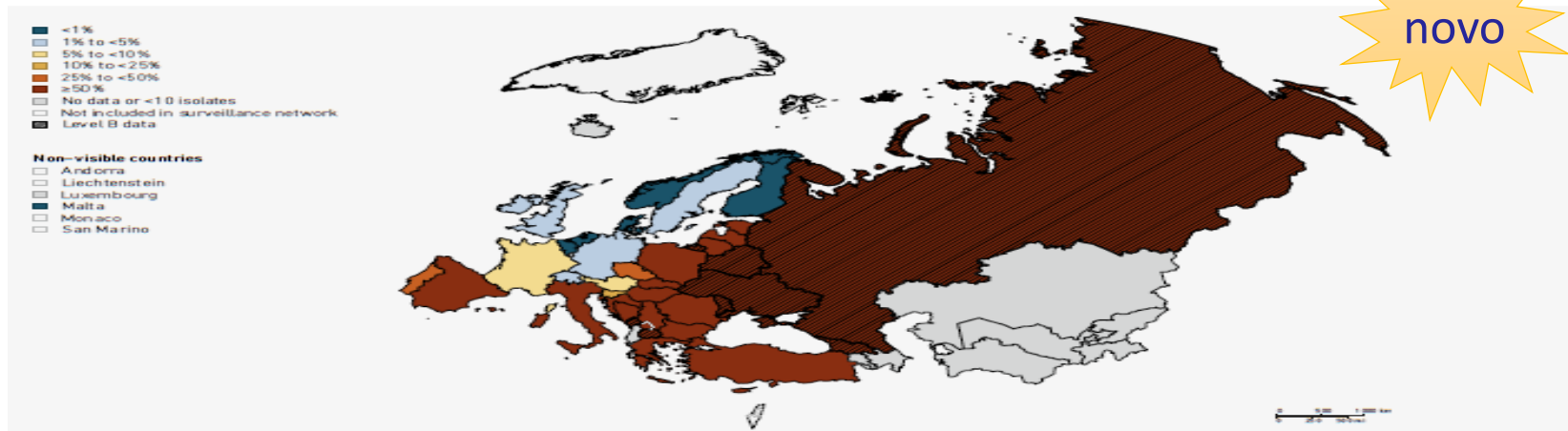
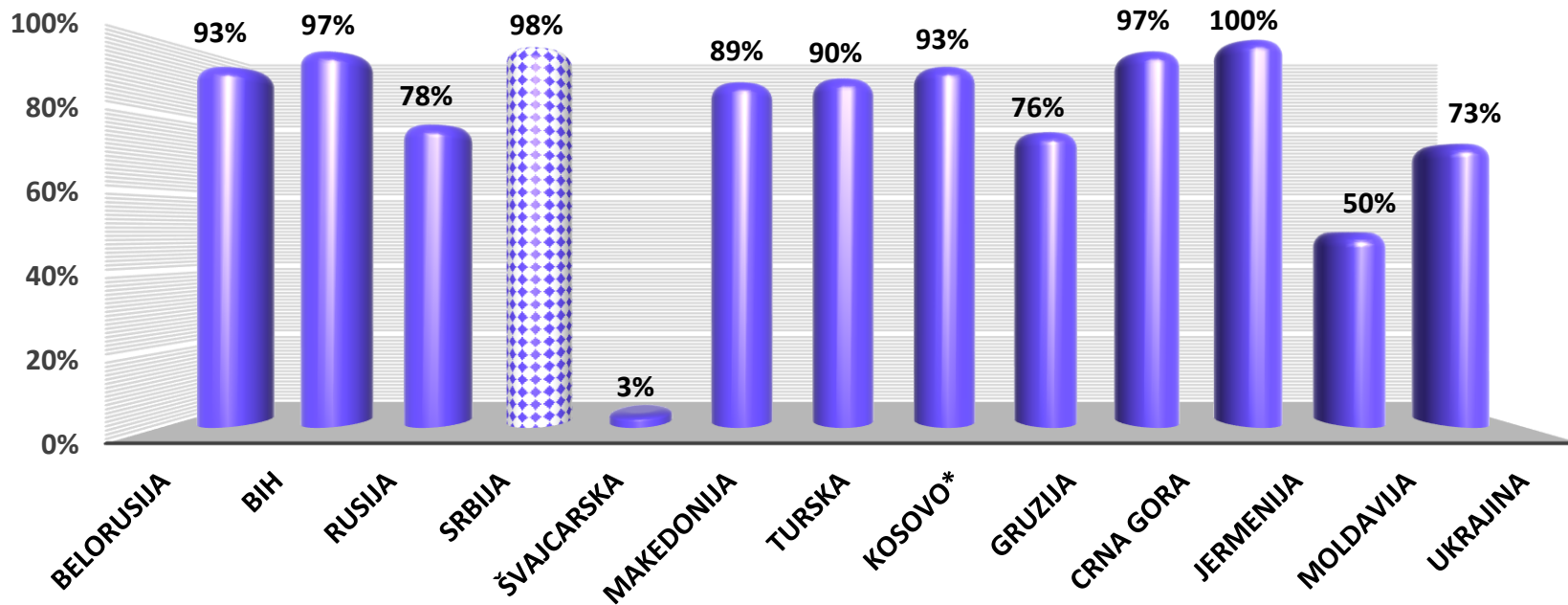
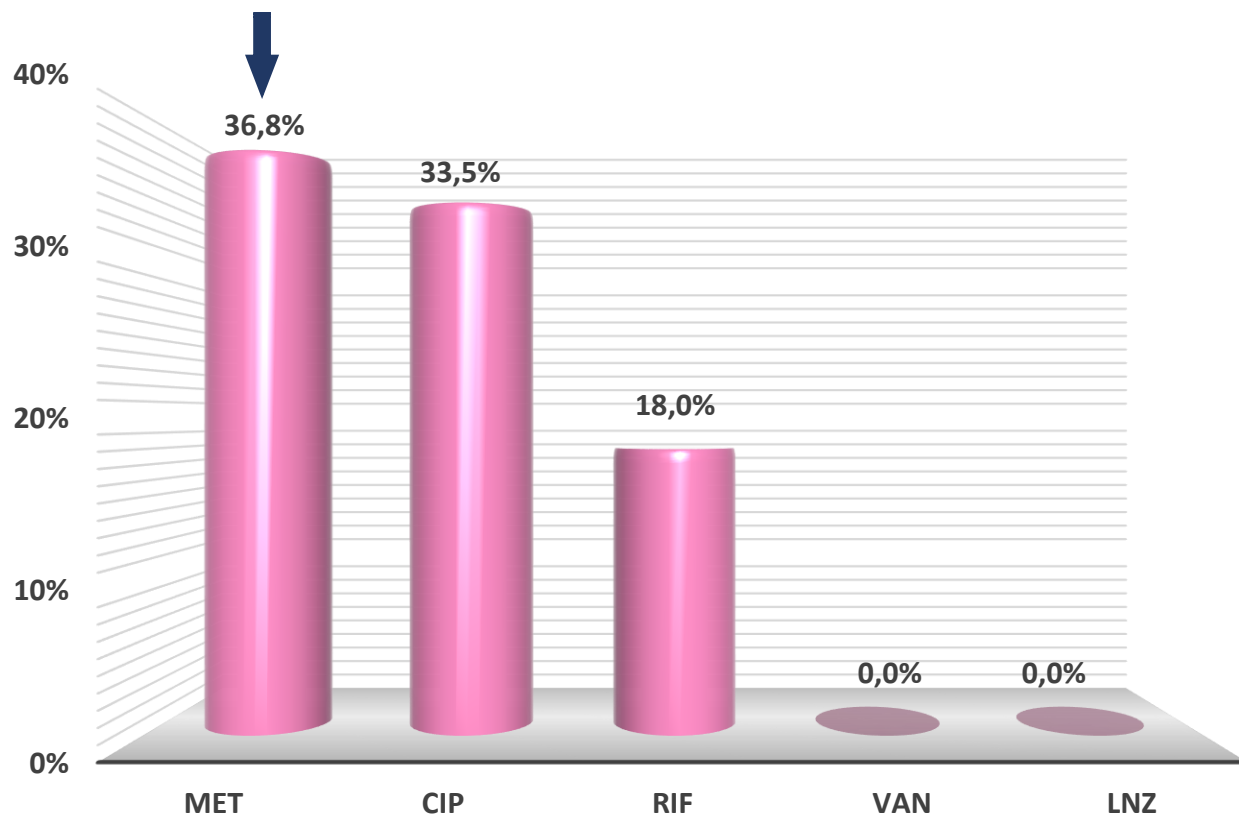


Fig. 2.7 Percentage of invasive *Acinetobacter* spp. isolates resistant to carbapenems by country or area, 2019



* In accordance with UNSC Resolution 1244 (1999)

Staphylococcus aureus: rezistencija na antimikrobne lekove u Srbiji, 2020. godina

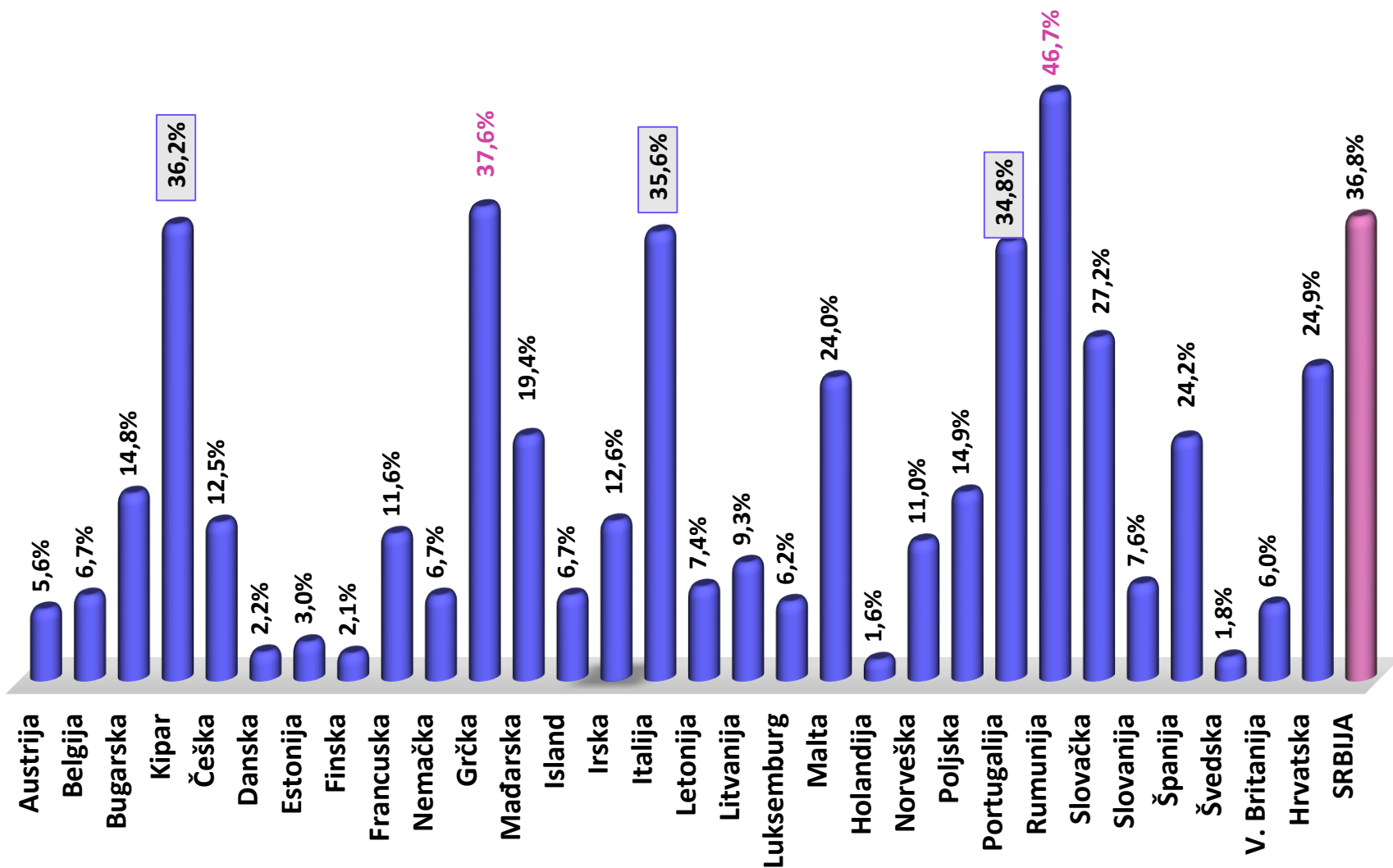


MET	Meticilin
CIP	Ciprofloksacin
RIF	Rifampicin
VAN	Vankomicin
LNZ	Linezolid

Broj izolata: 391 ↓

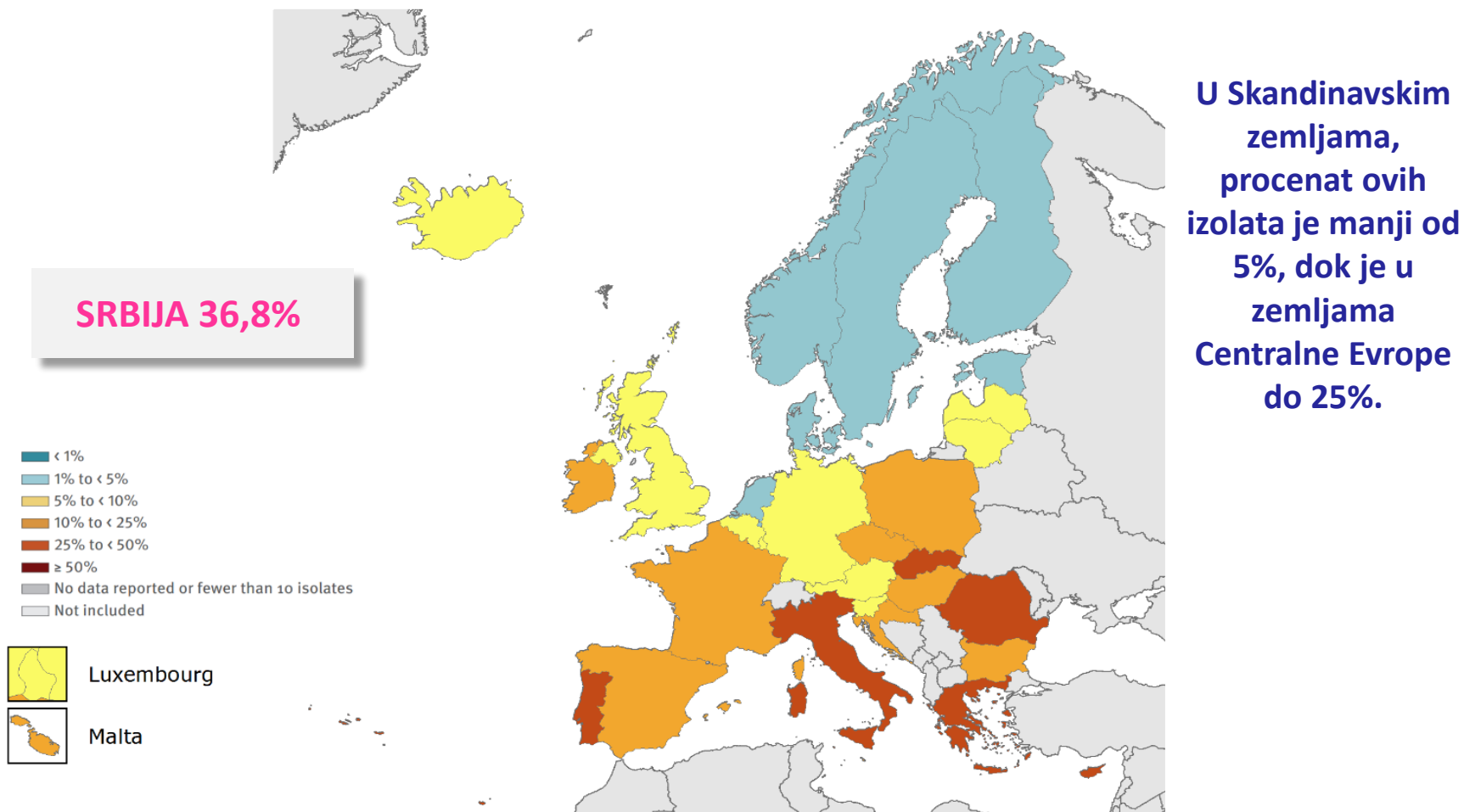
MET R u 2016. godini 26,5%
MET R u 2017. godini 26,1%
MET R u 2018. godini 28,0%
MET R u 2019. godini 26,5%

Proporcija MRSA izolata u evropskim zemljama



Staphylococcus aureus - procenat invazivnih izolata rezistentnih na meticilin, po zemljama, EU/EEA

Figure 8. *Staphylococcus aureus*. Percentage of invasive isolates resistant to meticillin (MRSA), by country, EU/EEA, 2019



MRSA – procenat izolata u Evropskom regionu (EARS-Net i CAESAR)

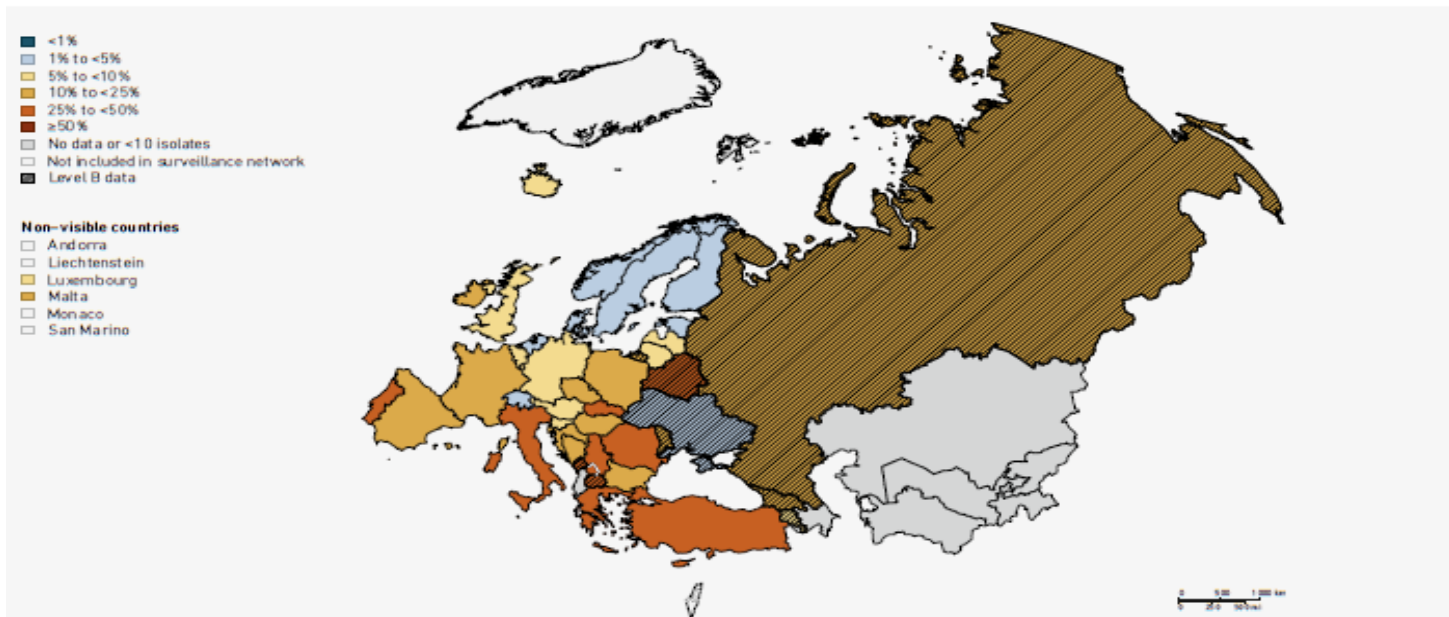
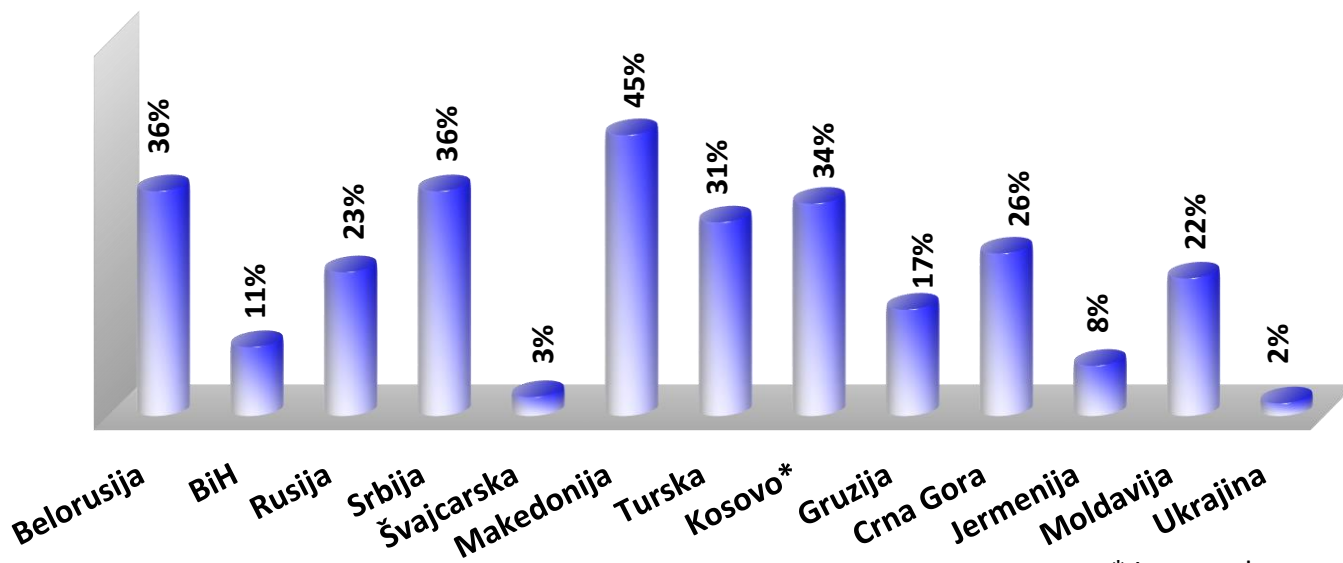


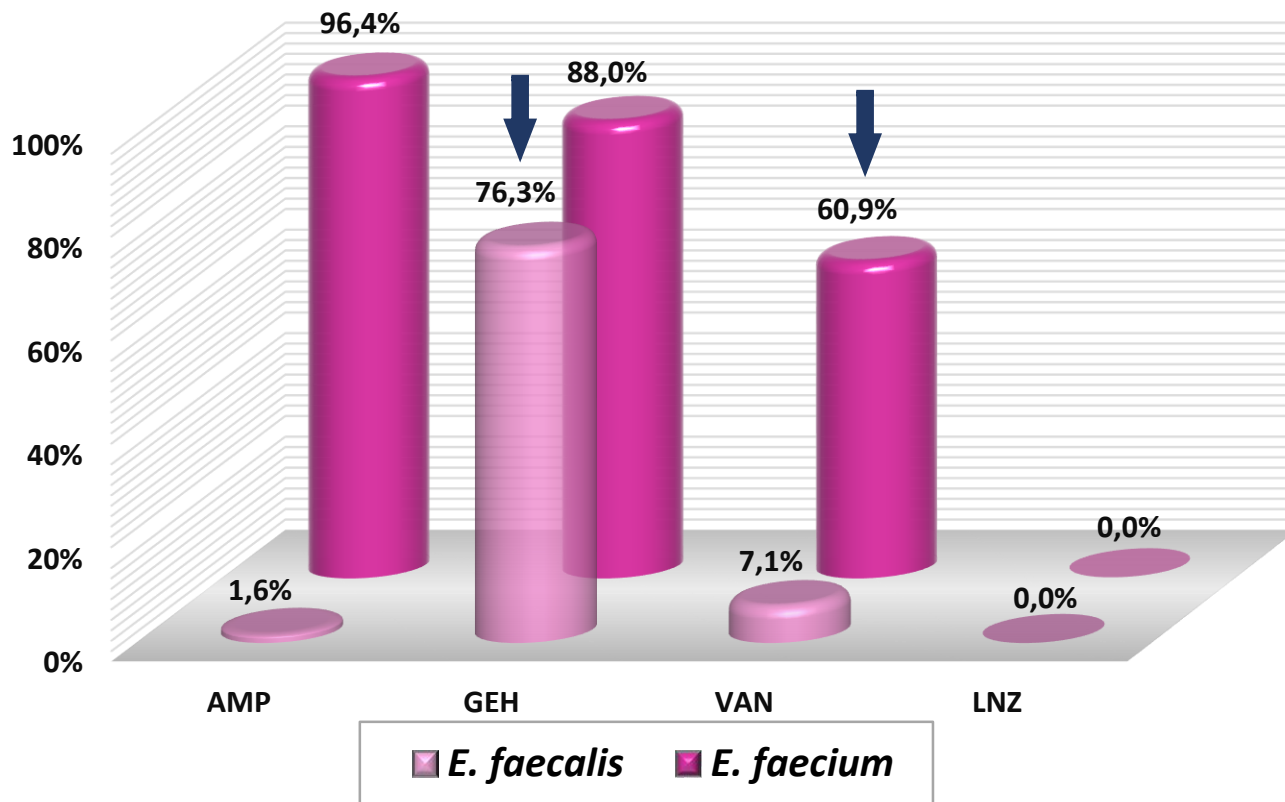
Fig. 2.8 Percentage of invasive *S. aureus* isolates resistant to methicillin (MR) Region (EARS-Net and CAESAR), by country or area, 2019

Među zemljama CAESAR mreže u Ukrajni i Švajcarskoj % MRSA izolata je nizak i on je > 5%, dok je u većini ostalih zemalja između 25-50%.



* In accordance with UNSC Resolution 1244 (1999)

Uporedni prikaz procenta rezistentnih izolata *E. faecalis*/*E. faecium* (312 ↑/276 ↑ izolata), 2020. godina



AMP	Ampicilin
GEH	Gentamicin visoke doze
VAN	Vankomicin
LNZ	Linezolid

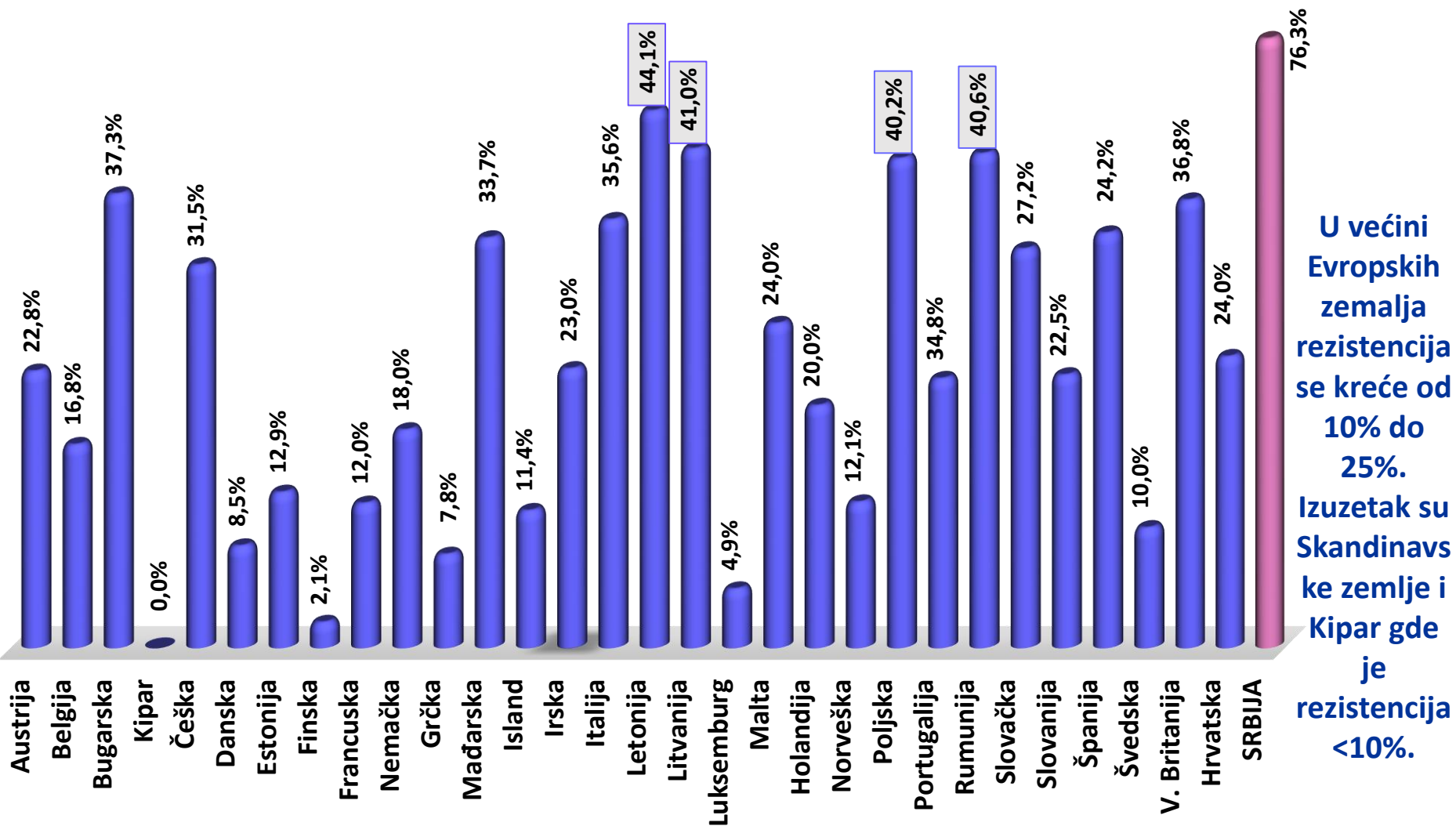
E. faecalis

GEH R u 2016. godini: 63,7%
 GEH R u 2017. godini: 70,9%
 GEH R u 2018. godini: 64,5%
 GEH R u 2019. godini: 59,7%

E. faecium

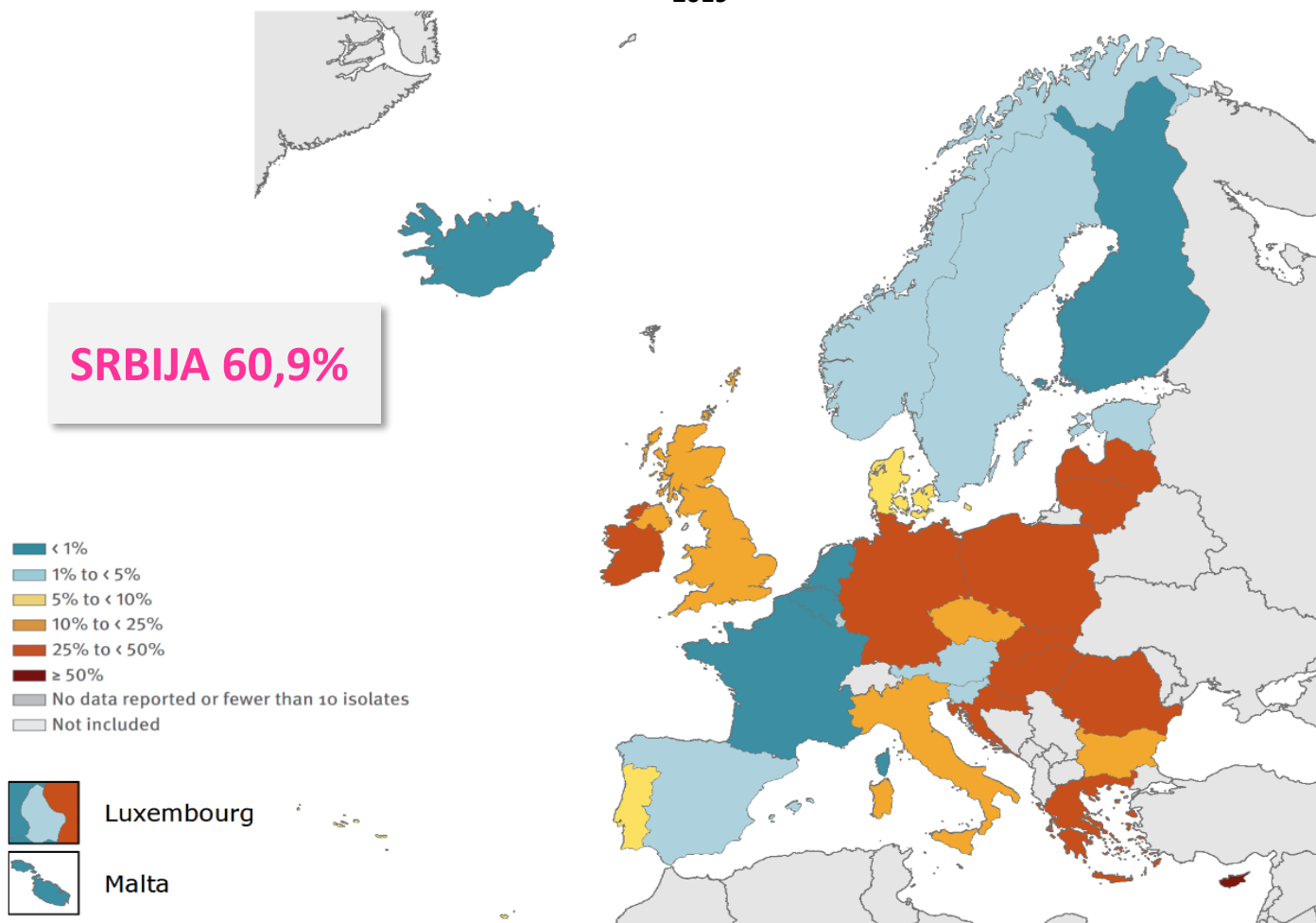
VAN R u 2016. godini: 35,5%
 VAN R u 2017. godini: 45,9%
 VAN R u 2018. godini: 53,5%
 VAN R u 2019. godini: 59,7%

Enterococcus faecalis - procenat invazivnih izolata rezistentnih na aminoglikozide visokih doza, po zemljama, EU/EEA



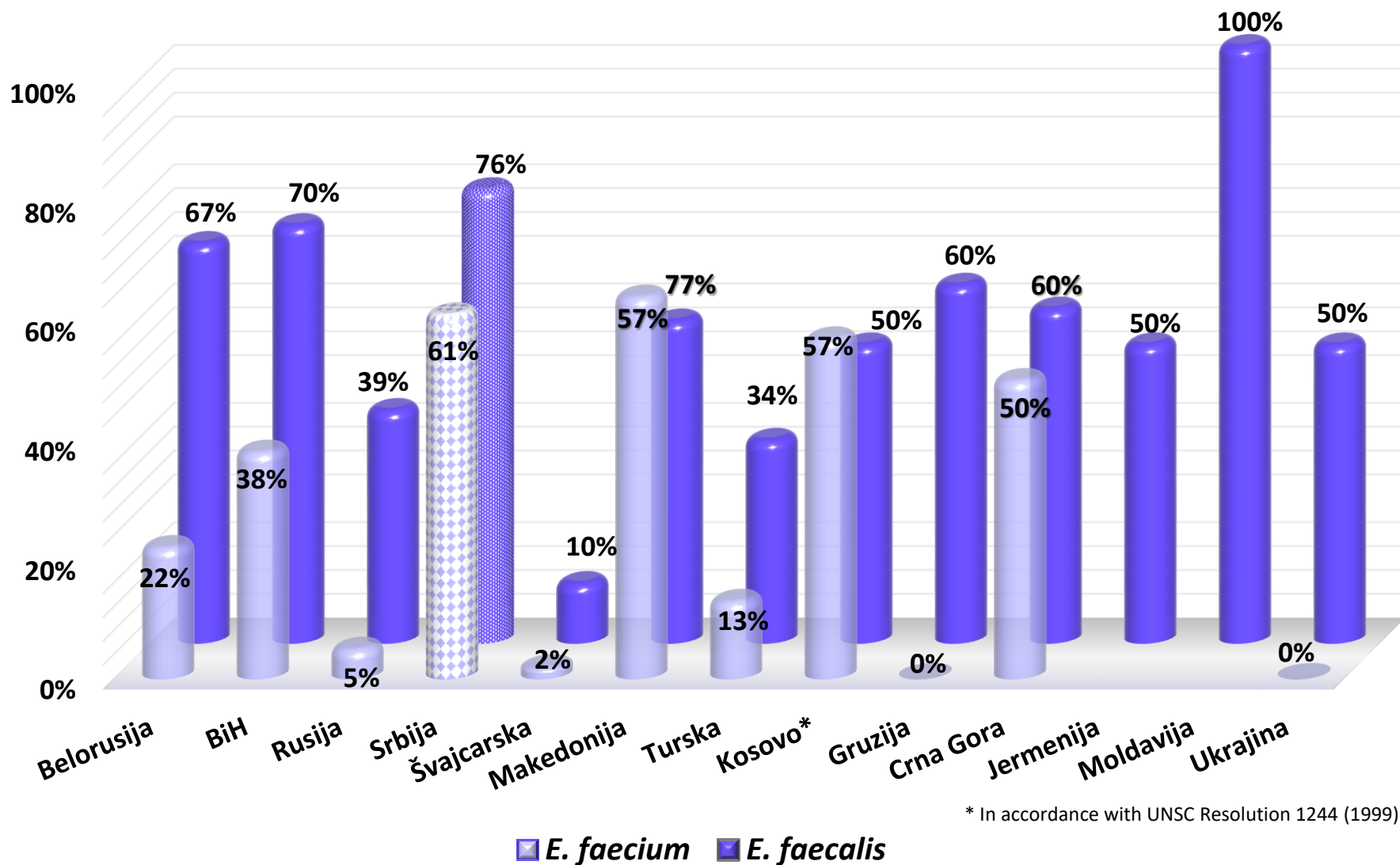
Enterococcus faecium - procenat invazivnih izolata rezistentnih na vankomicin, po zemljama, EU/EEA

Figure 10. *Enterococcus faecium*. Percentage of invasive isolates resistant to vancomycin, by country, EU/EEA, 2019



U Skandinavskim zemljama, Islandu, Španiji, Francuskoj, Sloveniji, Austriji rezistencija je <5%, dok u Poljskoj, Slovačkoj, Grčkoj, Nemačkoj, Rumuniji, Hrvatskoj, Mađarskoj i u Irskoj rezistencija se kreće od 25-50%. Na Kipru je najviša i iznosi 50%.

Enterococcus faecium/faecalis - procenat izolata rezistentnih na vankomicin/aminoglikozide visokih doza po zemljama CAESAR mreže



* In accordance with UNSC Resolution 1244 (1999)

Enterococcus faecium - procenat izolata rezistentnih na vankomicin u Evropskom regionu (EARS-Net i CAESAR)

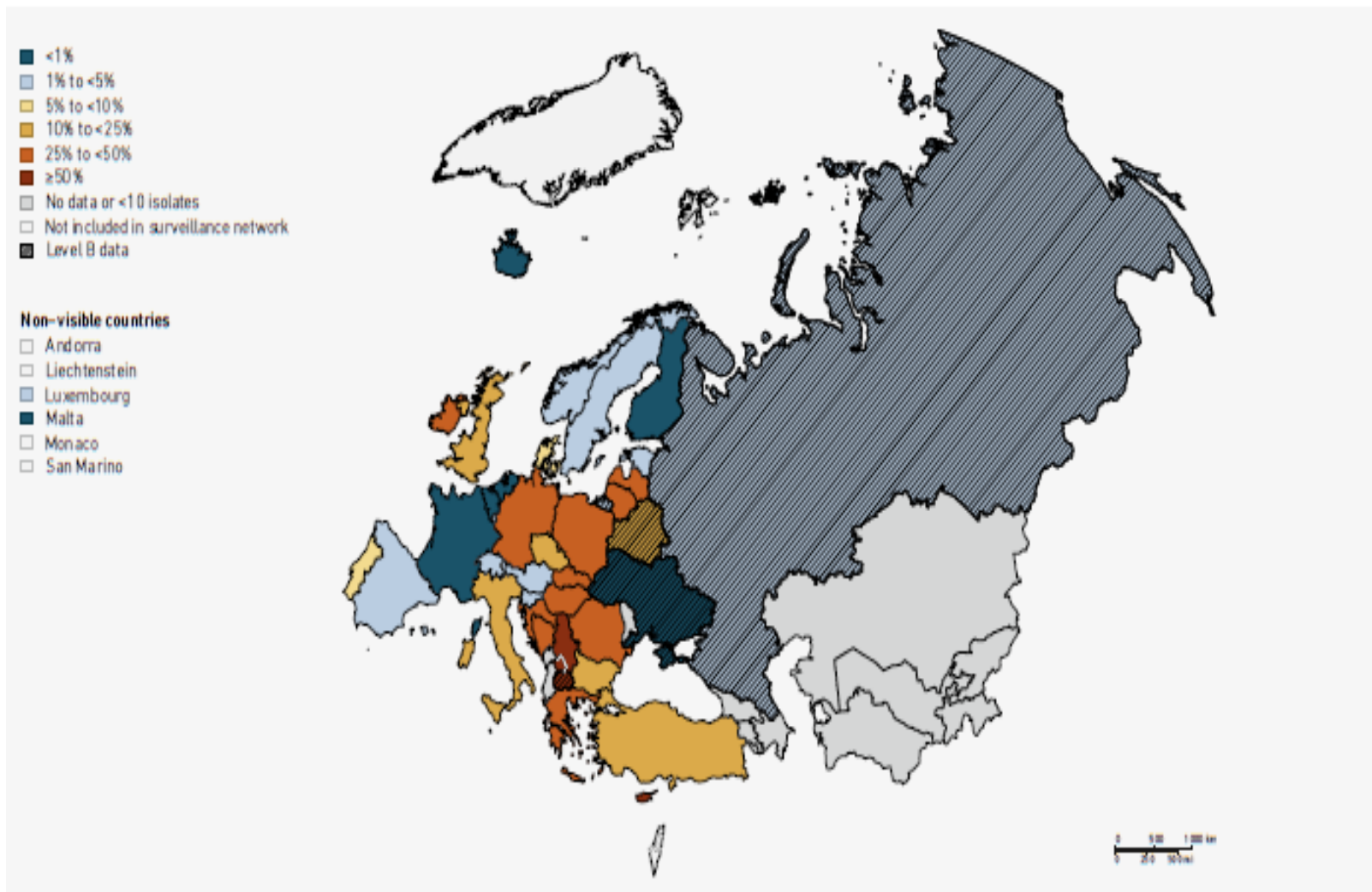
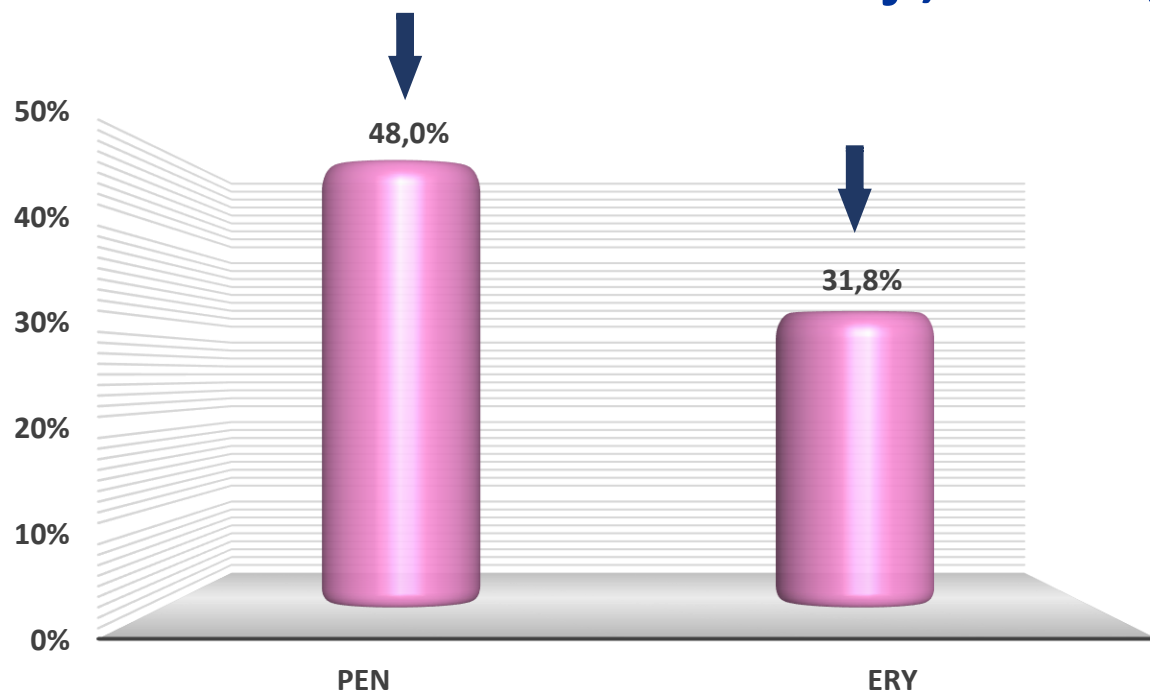


Fig. 2.10 Percentage of invasive *E. faecium* isolates resistant to vancomycin in the European Region (EARS-Net and CAESAR), by country or area, 2019

* In accordance with UNSC Resolution 1244 (1999)

Streptococcus pneumoniae: rezistencija na antimikrobne lekove u Srbiji, 2020. godina



PEN	Penicilin
ERY	Eritromicin

Broj izolata: 27 ↓

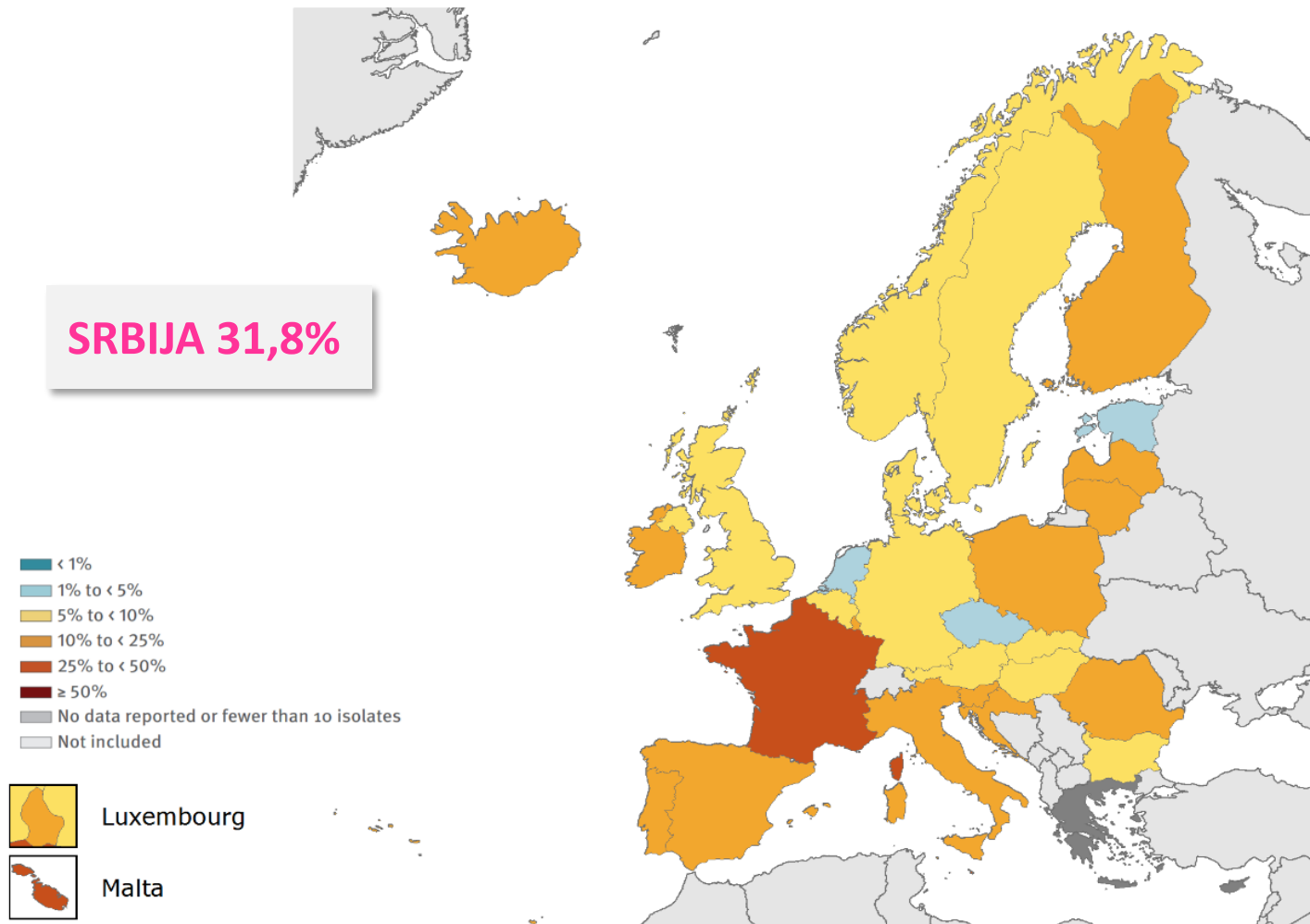
PEN: Granične vrednosti za meningitis (I+R)

PEN R u 2016. godini 25,4%
PEN R u 2017. godini 40,3%
PEN R u 2018. godini 32,9%
PEN R u 2019. godini 30,8%

ERY R u 2016. godini 31,0 %
ERY R u 2017. godini 26,6%
ERY R u 2018. godini 27,0%
ERY R u 2019. godini 34,2%

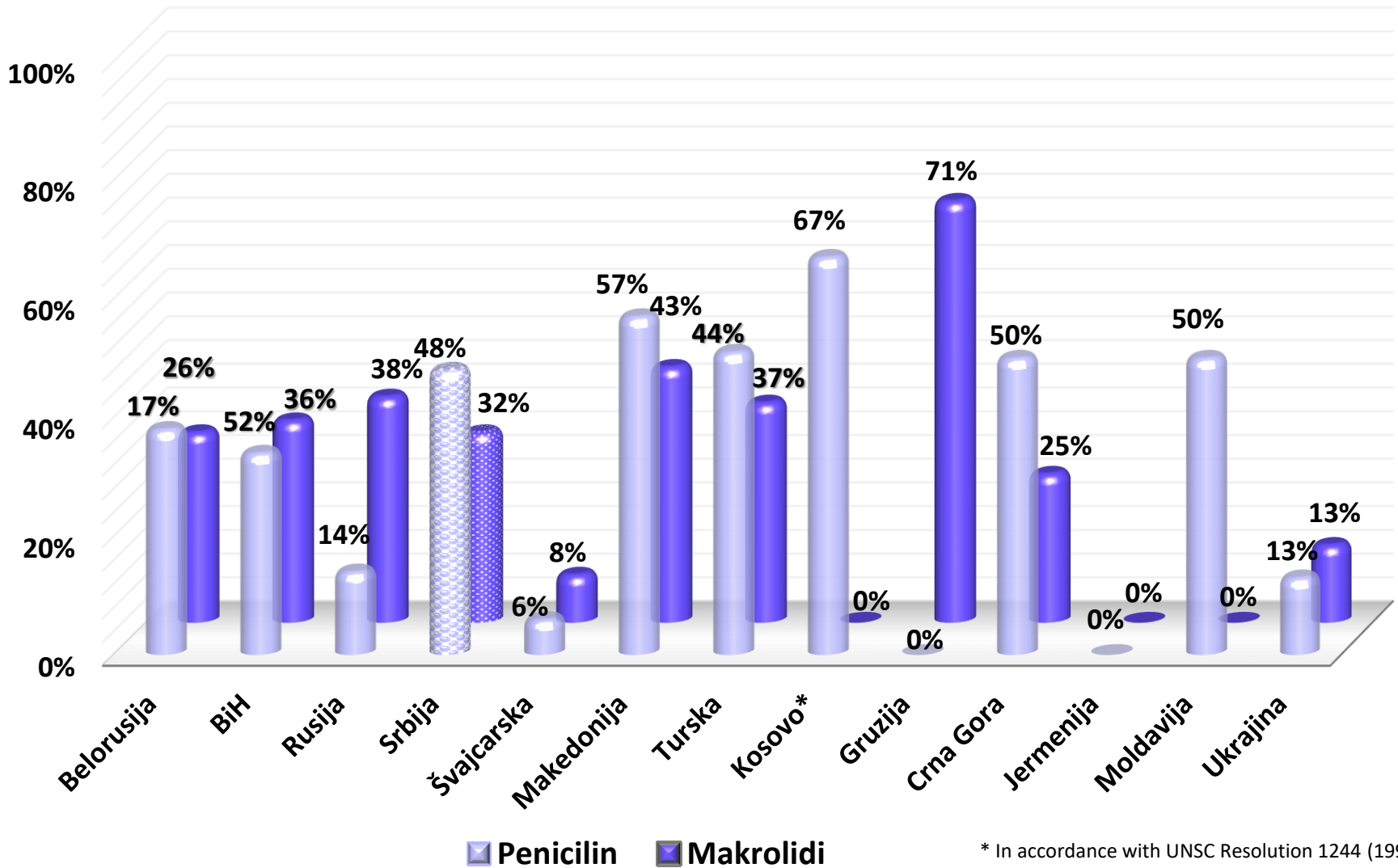
Streptococcus pneumoniae - procenat invazivnih izolata rezistentnih na makrolide, po zemljama, EU/EEA

Figure 9. *Streptococcus pneumoniae*. Percentage of penicillin non-wild type invasive isolates, by country, EU/EEA, 2019



U većini zemalja Evropske unije rezistencija je <25%, izuzev Poljske, Malte, Hrvatske i Bugarske gde je od 25-50%.

Streptococcus pneumoniae - procenat izolata rezistentnih na penicilin i makrolide po zemljama CAESAR mreže



* In accordance with UNSC Resolution 1244 (1999)

Streptococcus pneumoniae - procenat izolata rezistentnih na penicilin u Evropskom regionu (EARS-Net i CAESAR)

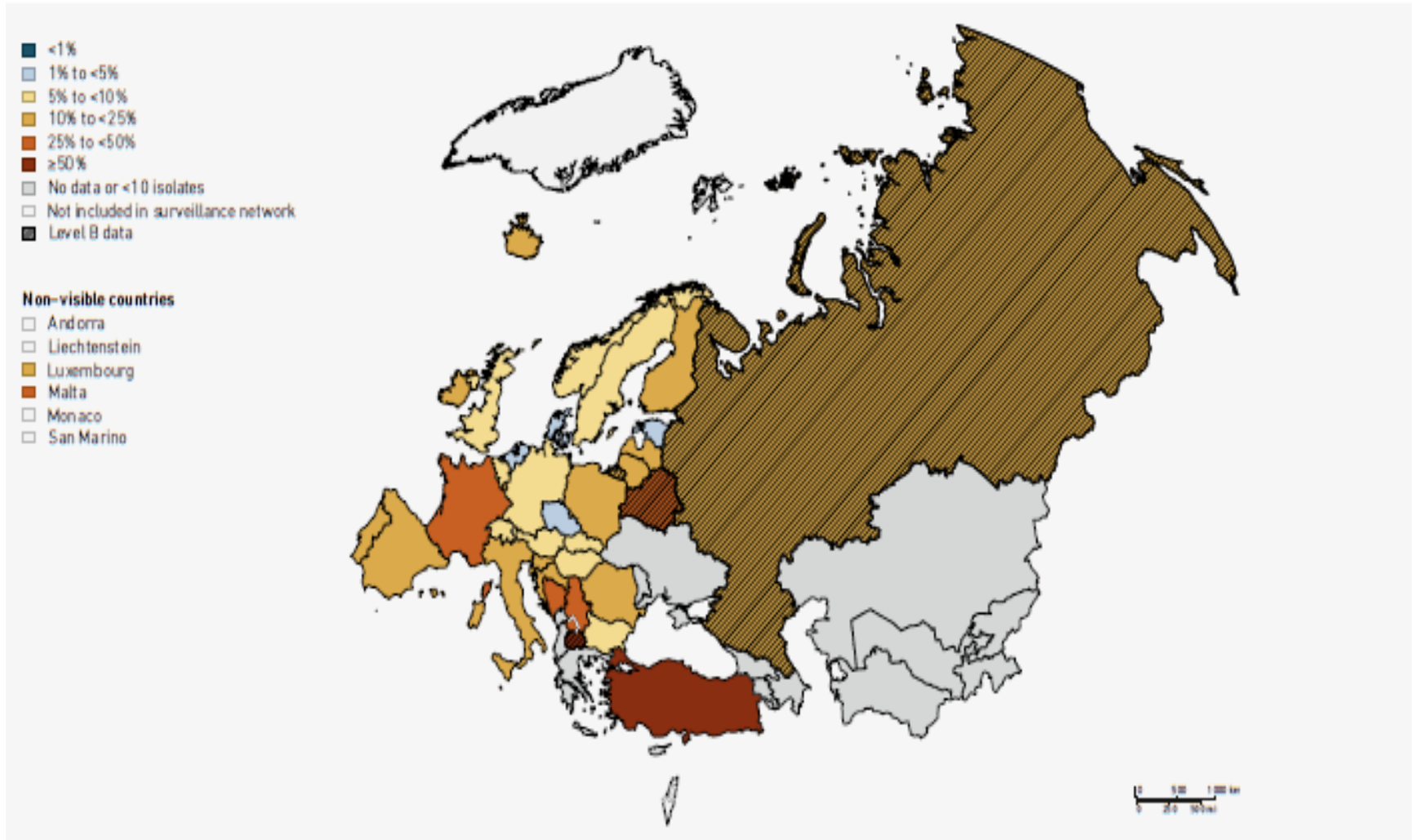


Fig. 2.9 Percentage of invasive penicillin non-wild type *S. pneumoniae* isolates by country or area, 2019 (EARS-Net and CAESAR).

* In accordance with UNSC Resolution 1244 (1999)