



Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

EARSS in Ireland, 2006

Results of
invasive *Pseudomonas aeruginosa* infection
(blood/CSF)
surveillance

Antibiotic codes: *Pseudomonas aeruginosa*

AMK	Amikacin
ATM	Aztreonam
CAZ	Ceftazidime
CIP	Ciprofloxacin
COL	Colistin
CIP	Ciprofloxacin
GEN	Gentamicin
IMP	Imipenem
MEM	Meropenem
OFX	Ofloxacin
PIP	Piperacillin
TZP	Piperacillin/tazobactam

EARSS *P. aeruginosa*:

Objective and case definition

Objective:

To determine the proportions of *P. aeruginosa* isolates from blood or CSF that are resistant to piperacillin (+/- tazobactam), ceftazidime, carbapenems (imipenem or meropenem), fluoroquinolones (e.g. ciprofloxacin or ofloxacin) and aminoglycosides (e.g. gentamicin)

Case definition:

EARSS collects data on the first invasive isolate of *P. aeruginosa* per patient per quarter

Caveats in interpreting EARSS data

- Care must be exercised when interpreting the raw figures, i.e. increases in numbers of isolates, as the numbers of laboratories reporting to EARSS has increased over the years
- EARSS data does not distinguish clinically significant isolates from contaminants

Quarterly and Annual proportions of AMR *P. aeruginosa* invasive infection for 2006 with 95% Confidence Intervals (CI)

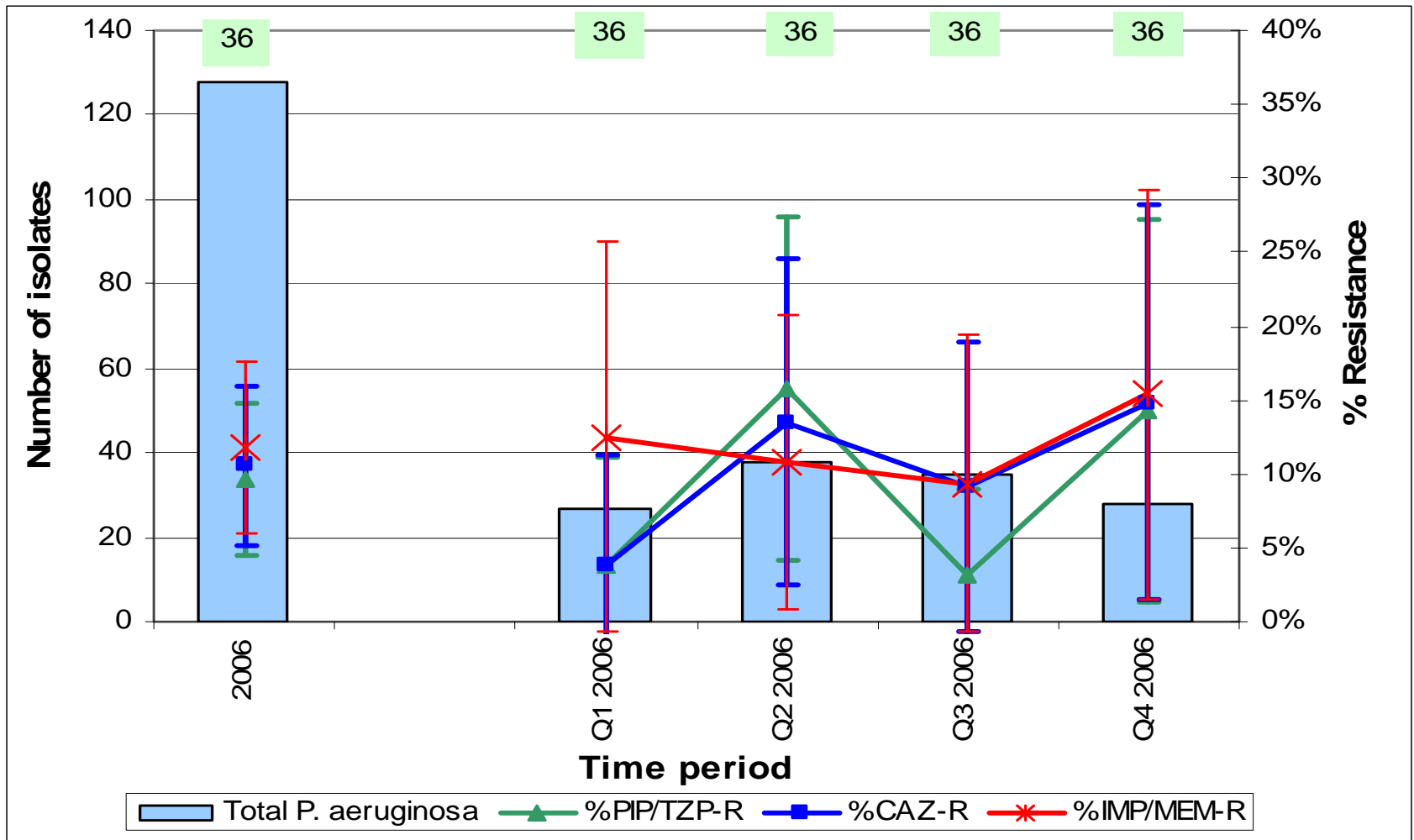
Year	No. labs	No. isolates	%PIP/TZP-R*	95%CI	%CAZ-R*	95%CI	%IPM/MEM-R*	95%CI
Q1 2006	36	27	3.8%	0-11.1%	3.8%	0-11.2%	12.5%	0-25.7%
Q2 2006	36	38	15.8%	4.2-27.4%	13.5%	2.5-24.5%	10.8%	0.8-20.8%
Q3 2006	36	35	3.1%	0-8.9%	9.1%	0-18.9%	9.4%	0-19.5%
Q4 2006	36	28	14.3%	1.3-27.2%	14.8%	1.4-28.2%	15.4%	1.5-29.3%
2006	36	128	9.7%	4.6-14.8%	10.6%	5.1-16.0%	11.8%	6.0-17.6%

Year	No. labs	No. isolates	%CIP/OFX-R*	95%CI	%GEN-R*	95%CI
Q1 2006	36	27	11.1%	0-23.0%	15.4%	1.5-29.3%
Q2 2006	36	38	15.8%	4.2-27.4%	10.5%	0.8-20.3%
Q3 2006	36	35	22.9%	8.9-36.8%	5.7%	0-13.4%
Q4 2006	36	28	21.4%	6.2-36.6%	10.7%	0-22.2%
2006	36	128	18.0%	11.3-24.6%	10.2%	5-15.5%

AMR, antimicrobial resistant

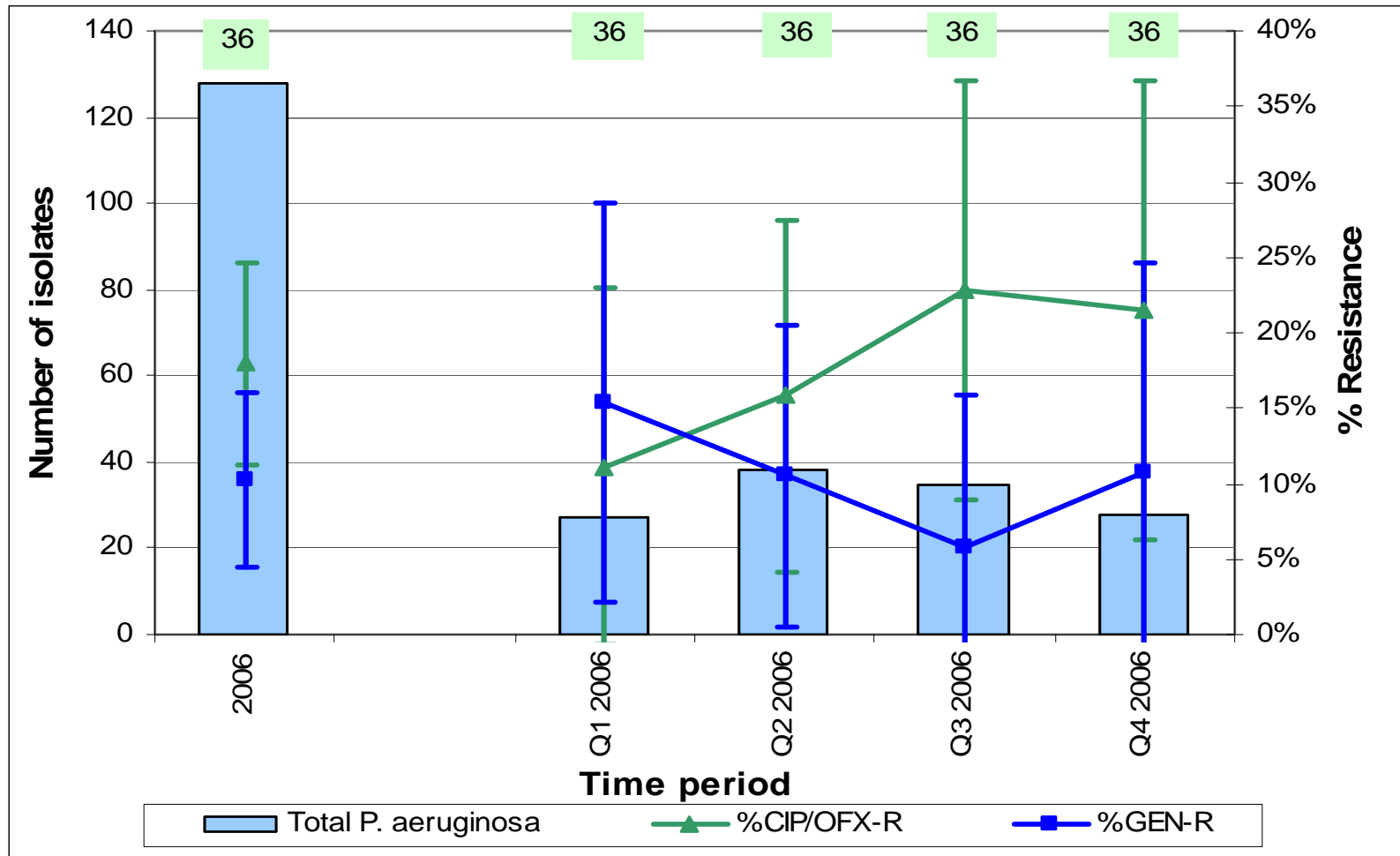
* Not all isolates tested

EARSS in Ireland – *P. aeruginosa* trends (beta-lactam antibiotics)



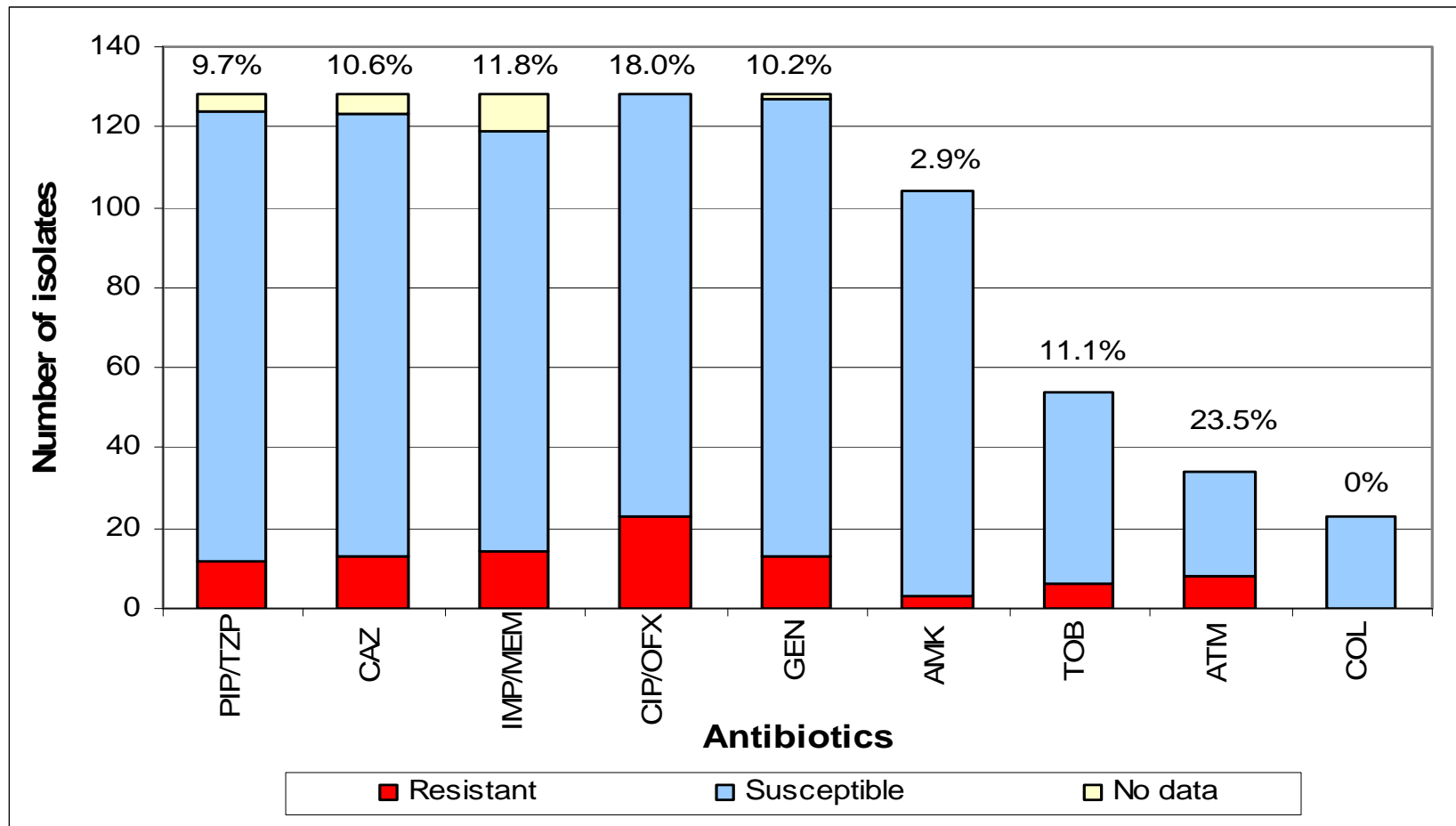
Changes in the numbers of participating laboratories are indicated above the bars

EARSS in Ireland – *P. aeruginosa* trends (ciprofloxacin and gentamicin)



Changes in the numbers of participating laboratories are indicated above the bars

Susceptibility data to mandatory and optional antibiotics for *P. aeruginosa* reported in 2006



Percentage resistance is indicated above the bar

Resistance profiles of *P. aeruginosa* isolates in 2006 (n = 128)

Resistance profile	No. isolates	
Fully S	81	
3	1	
M	6	
C	7	
G	2	
T3	5	
TC	1	
MC	2	
T3M	1	MDR
TCG	1	MDR
3MC	1	MDR
3CG	1	MDR
MCG	3	MDR
CGT3	4	MDR
Incomplete	12	
Grand Total	128	

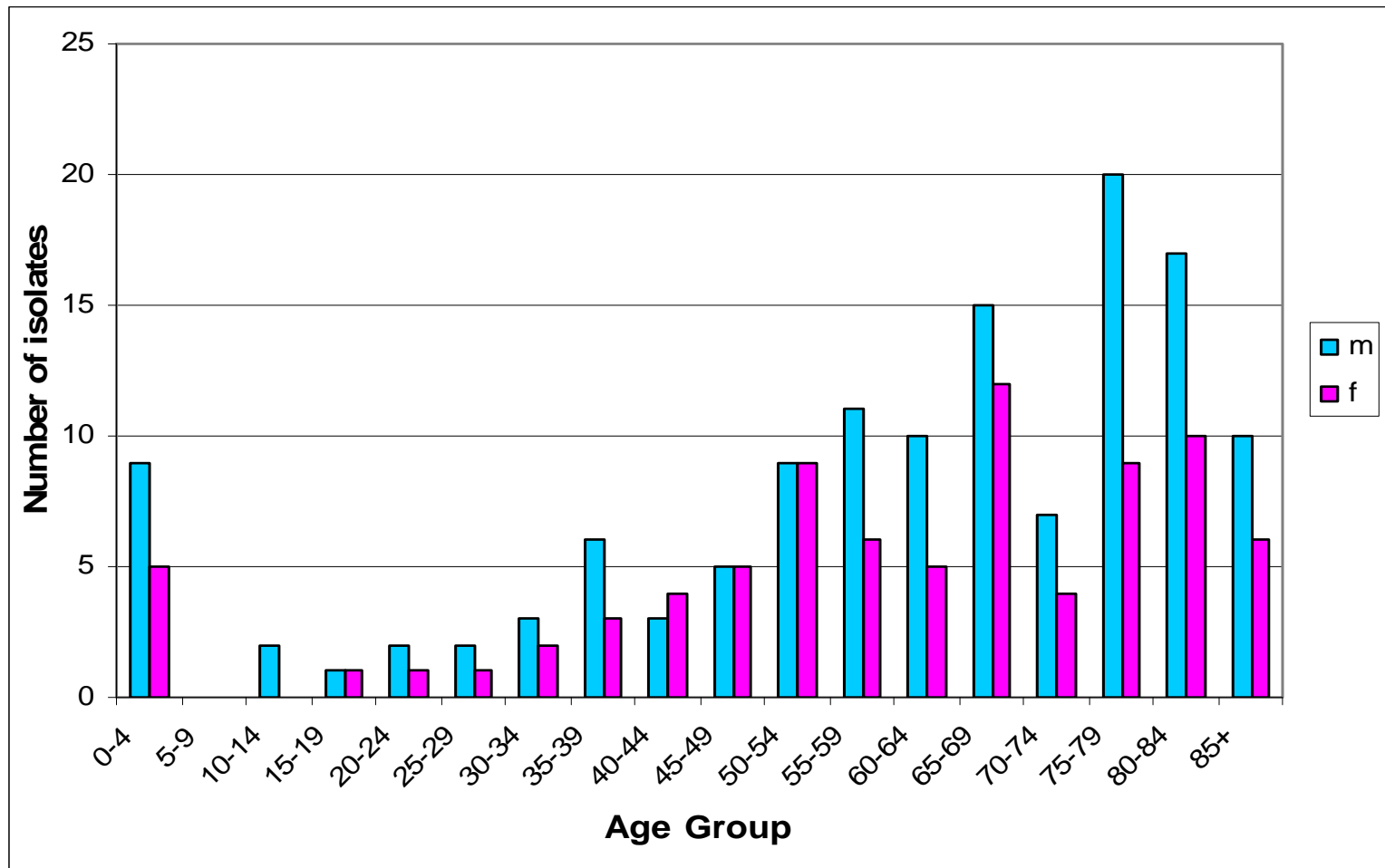
Fully S, fully susceptible to all 5 indicator antibiotics/classes; **T**, piperacillin+/-tazobactam; **3**, 3GC (ceftazidime); **M**, meropenem or imipenem; **C**, ciprofloxacin or ofloxacin; **G**, gentamicin

Multi-drug resistant (MDR*) *P. aeruginosa* isolates

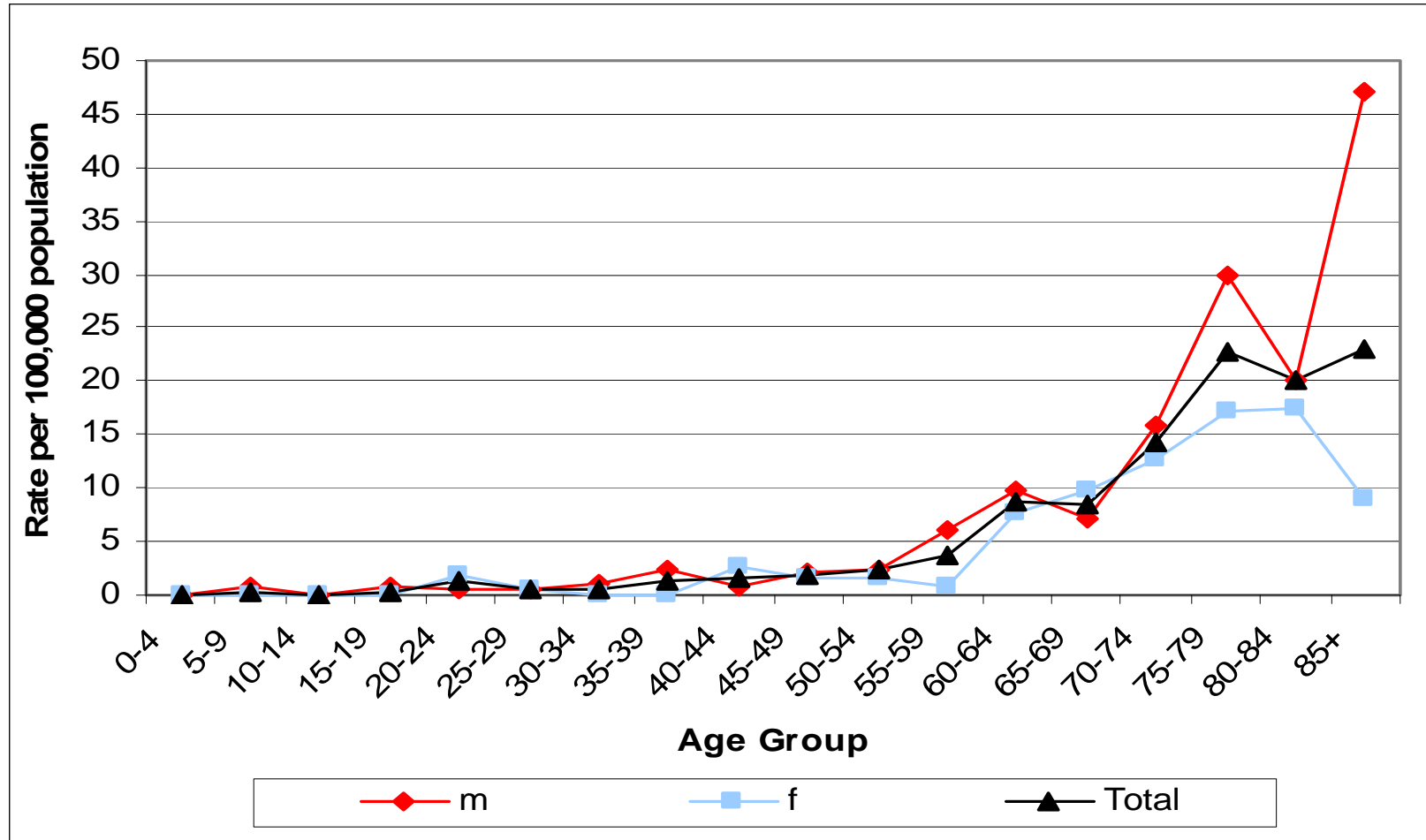
Time period	Total PAE	No. tested against all 5 indicator antibiotics	No. MDR	% MDR
Q1 2006	27	22	1	4.5%
Q2 2006	38	36	4	11.1%
Q3 2006	35	32	2	6.3%
Q4 2006	28	26	4	15.4%
2006	128	116	11	9.5%

* Defined as resistance to 3 or more of the 5 “indicator” classes of antibiotics: piperacillin (+/-tazobactam), ceftazidime, carbapenems (imipenem or meropenem), fluoroquinolones (e.g. ciprofloxacin or ofloxacin) and aminoglycosides (e.g. gentamicin)

Age and sex distribution of patients with invasive *P. aeruginosa* infection in Ireland in 2006



Age and sex-specific incidence rates of invasive *P. aeruginosa* infection in Ireland in 2006



Using the 2006 census as the denominator

(NB. the estimated coverage of the Irish population by EARSS is approx. 98%)

Mean, median, mode and range of ages of patients with invasive *P. aeruginosa* infection in Ireland in 2006

	No.	No. with age	mean	median (95%CI)	mode	range
<i>P. aeruginosa</i>	128	128	65y	69y (64-73y)	75y	5y - 99y

Sex distribution of patients with invasive *P. aeruginosa* infection in Ireland in 2006

No. male = 71

No. female = 54

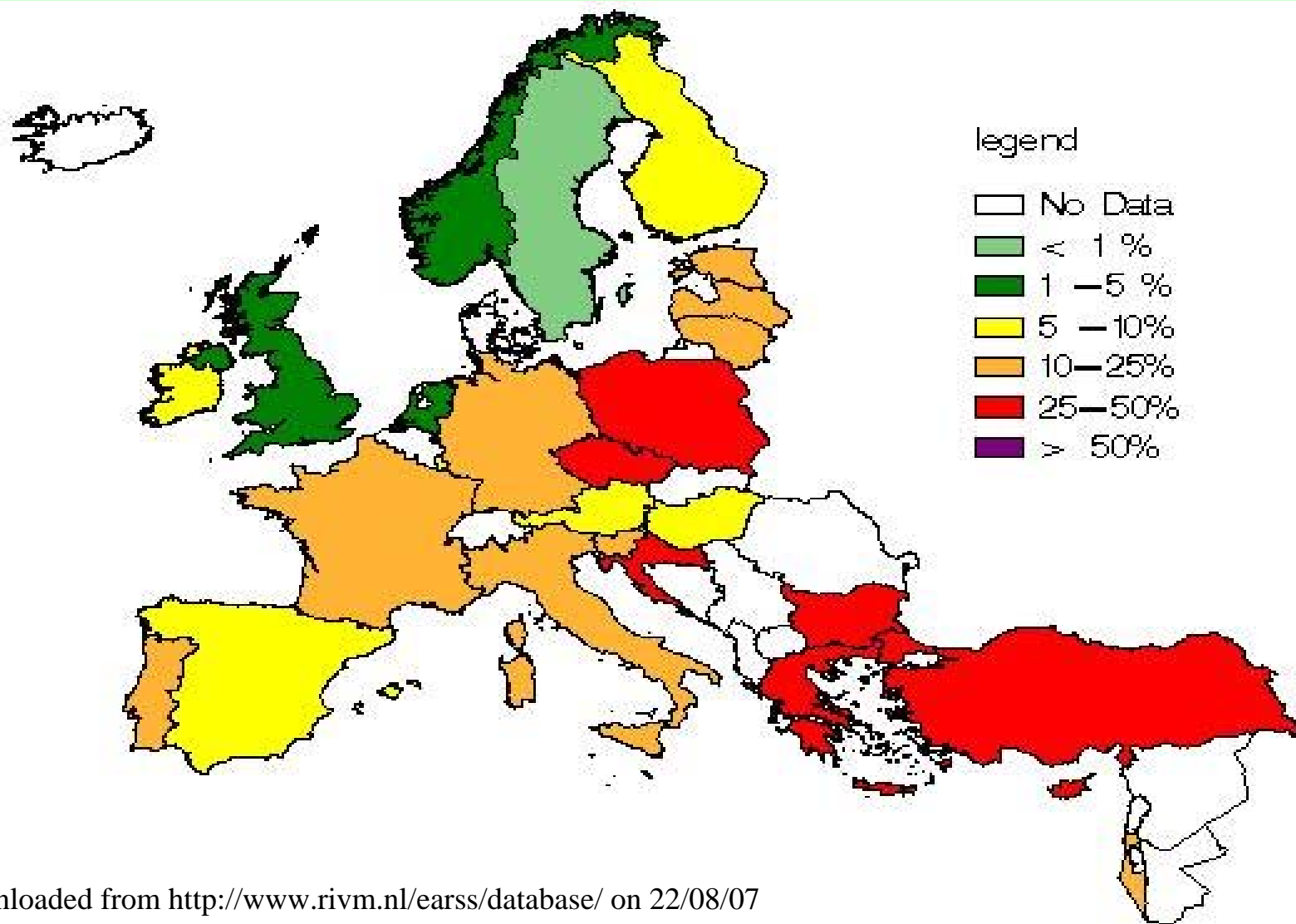
(Gender unknown = 3)

Male-to-female ratio = 1.31:1

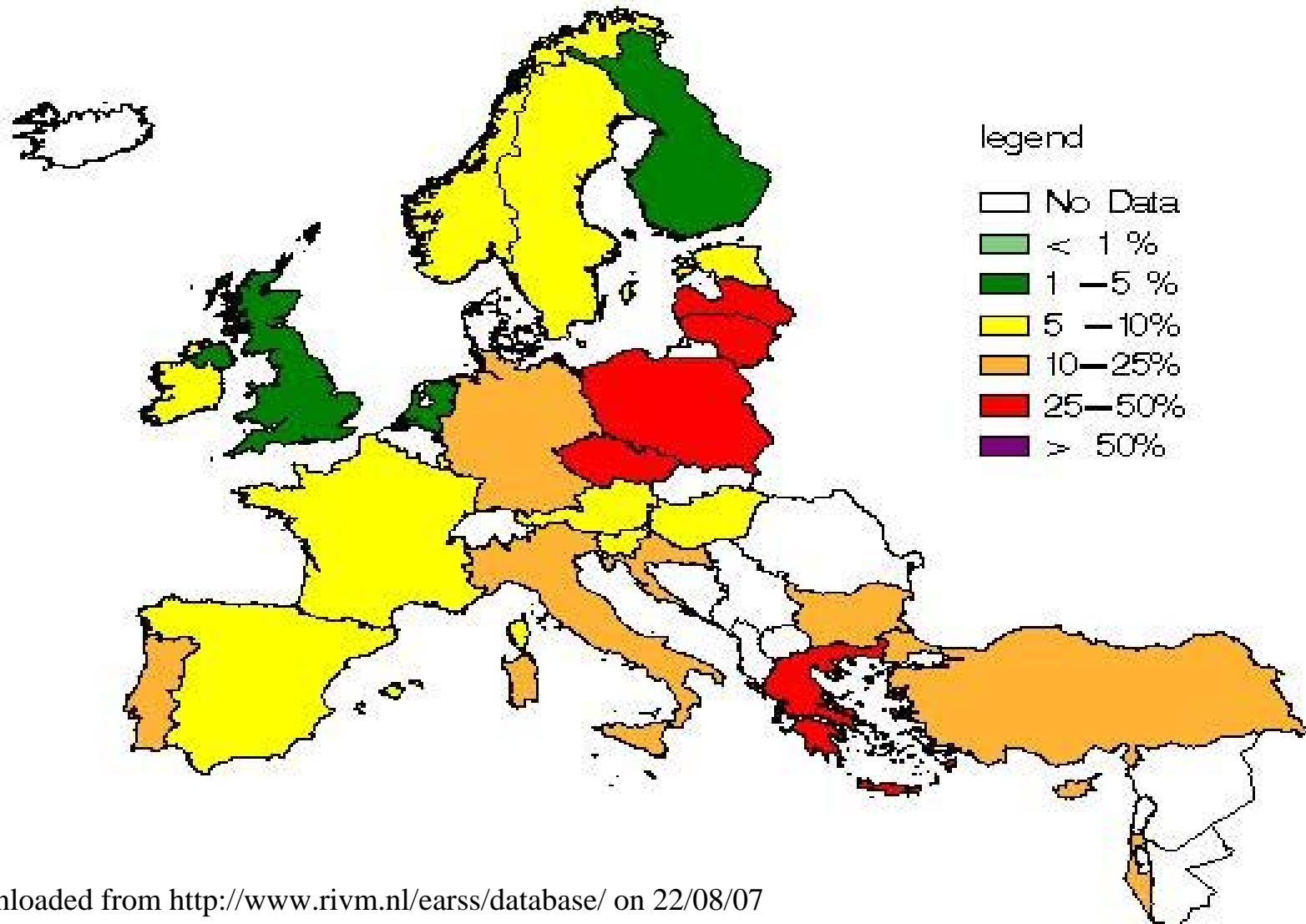
(z-test = 1.535, P-value = 0.12)

Males were approximately 1.3-times more likely to get an invasive *P. aeruginosa* infection than females but this was not significant

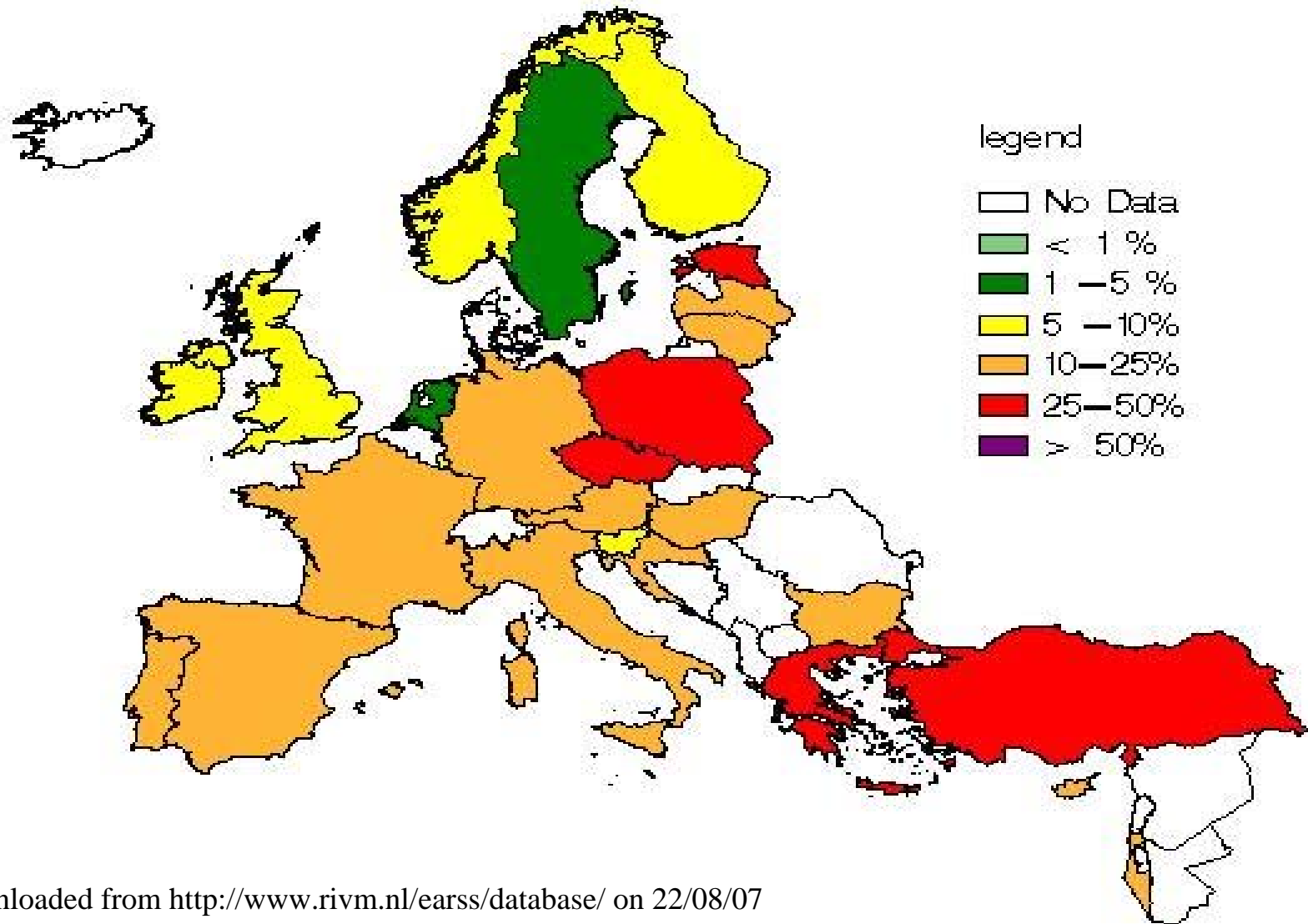
P. aeruginosa - distribution of PIP/TZP resistance in EARSS countries in 2006



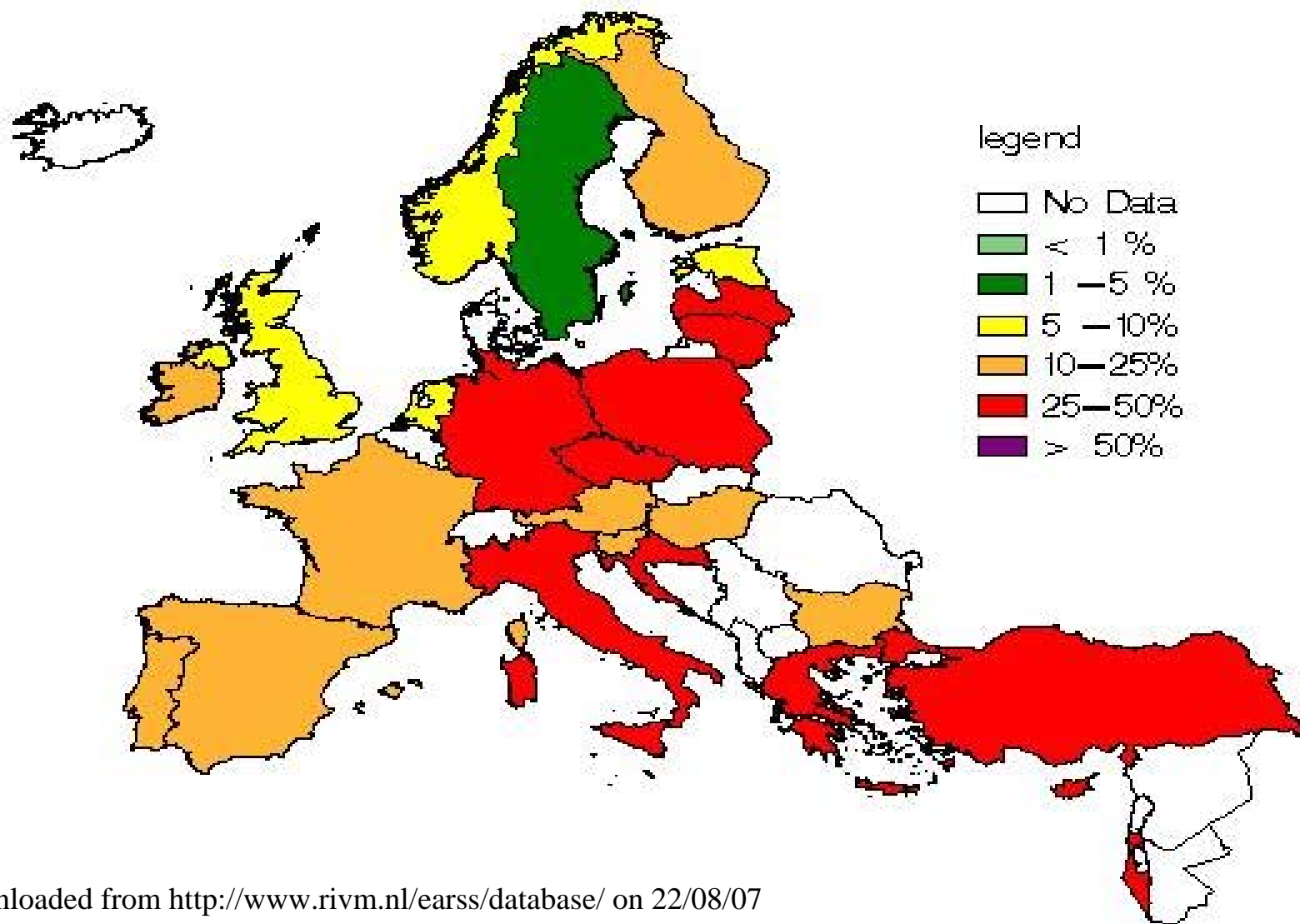
P. aeruginosa - distribution of CAZ resistance in EARSS countries in 2006



P. aeruginosa - distribution of carbapenem (IMP/MEM) resistance in EARSS countries in 2006



P. aeruginosa - distribution of fluoroquinolone (CIP/OFX) resistance in EARSS countries in 2006



P. aeruginosa - distribution of aminoglycoside (GEN) resistance in EARSS countries in 2006

