



**EUCAST**

European Committee  
on Antimicrobial  
Susceptibility Testing

# ***Enterococcus* spp.**

Calibration of zone diameter  
breakpoints to MIC values

Version 7.1  
January 2026

# *Enterococcus* spp.

## MIC and zone diameter correlates

- The following histograms present inhibition zone diameter distributions from EUCAST antimicrobial susceptibility testing. In most, the different colours of the bars indicate different MIC values. In some, the colours of the bars indicate a resistance gene or a resistance mechanism.
- The distributions include data for wild-type isolates and for isolates with acquired resistance mechanisms. A large number of isolates with MIC values close to the edge of the wild-type distribution and/or close to EUCAST clinical breakpoints were intentionally included. These distributions can not be used to infer resistance rates or the performance of the tests with routine isolates.
- For some agents, isolates were tested on more than one occasion, including parallel tests with disks and media from several manufacturers. When this is the case, data are presented as both the “number of isolates tested” and the “total number of MIC-zone diameter correlates”, including replicate tests and parallel tests with disks and media from different sources.

# *Enterococcus* spp.

## Materials and methods

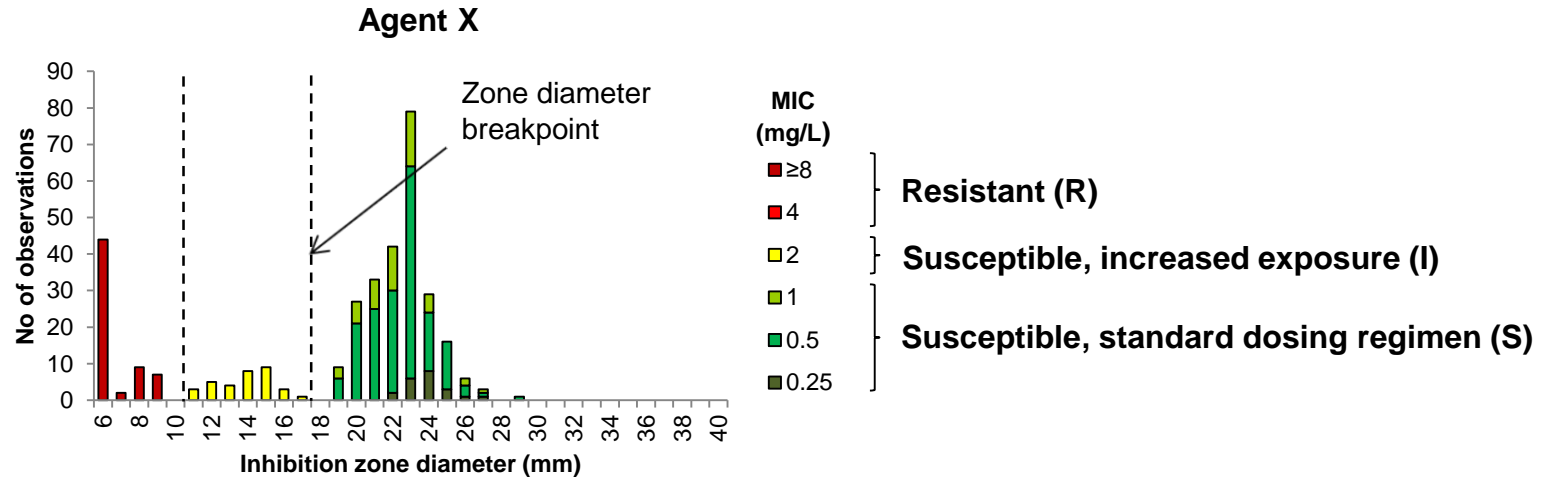
- Antimicrobial susceptibility testing was performed on clinical isolates of *Enterococcus* species, including *E. faecalis*, *E. faecium*, *E. avium*, *E. casseliflavus*, *E. durans*, *E. gallinarum*, *E. hirae*, *E. lactis*, *E. raffinosus* and *E. mundtii*. Disk diffusion was performed according to EUCAST methodology and MIC determination was performed with broth microdilution or gradient tests.
- The distributions of MIC vs. zone diameter in this presentation are the result of a collaboration between EUCAST, K-res, Tromsø (Norway), Laboratory Specialists Inc. (USA), Culture Collection of Porto (Portugal) and Public Health Wales (UK).
- This presentation is based on EUCAST Clinical Breakpoint Tables v. 16.0.

# Changes from previous version (7.0)

<b>Changes</b>
<ul style="list-style-type: none"><li>• No changes. Breakpoints checked against latest version of EUCAST Clinical Breakpoint Tables.</li></ul>

# Explanation of graphs:

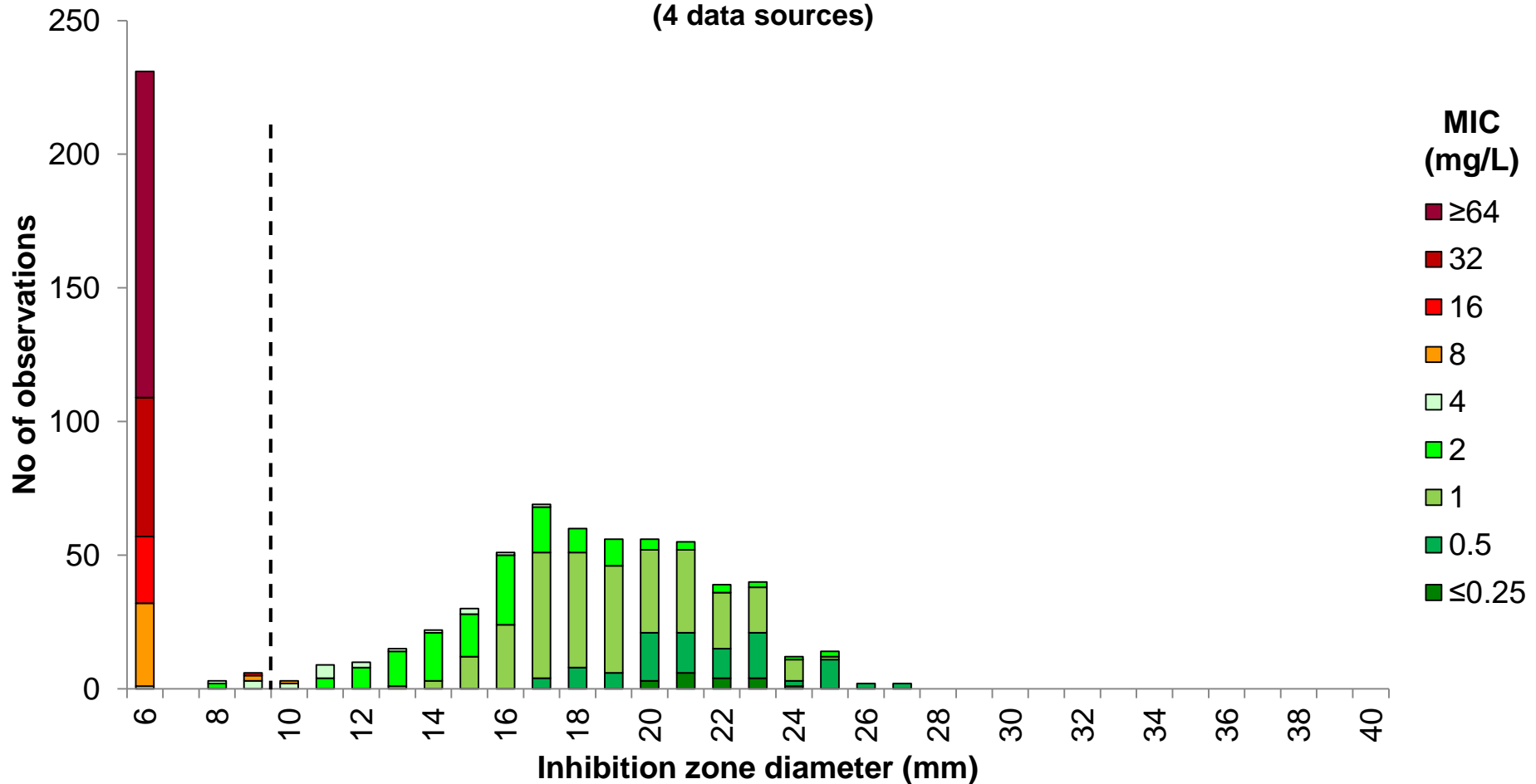
- These graphs show zone diameter distributions with MIC values or resistance mechanisms as coloured bars. Colours are related to current EUCAST MIC breakpoints.



# Ampicillin 2 $\mu$ g vs. MIC

## *Enterococcus* spp., 286 isolates (785 correlates)

(4 data sources)



### Breakpoints (iv)

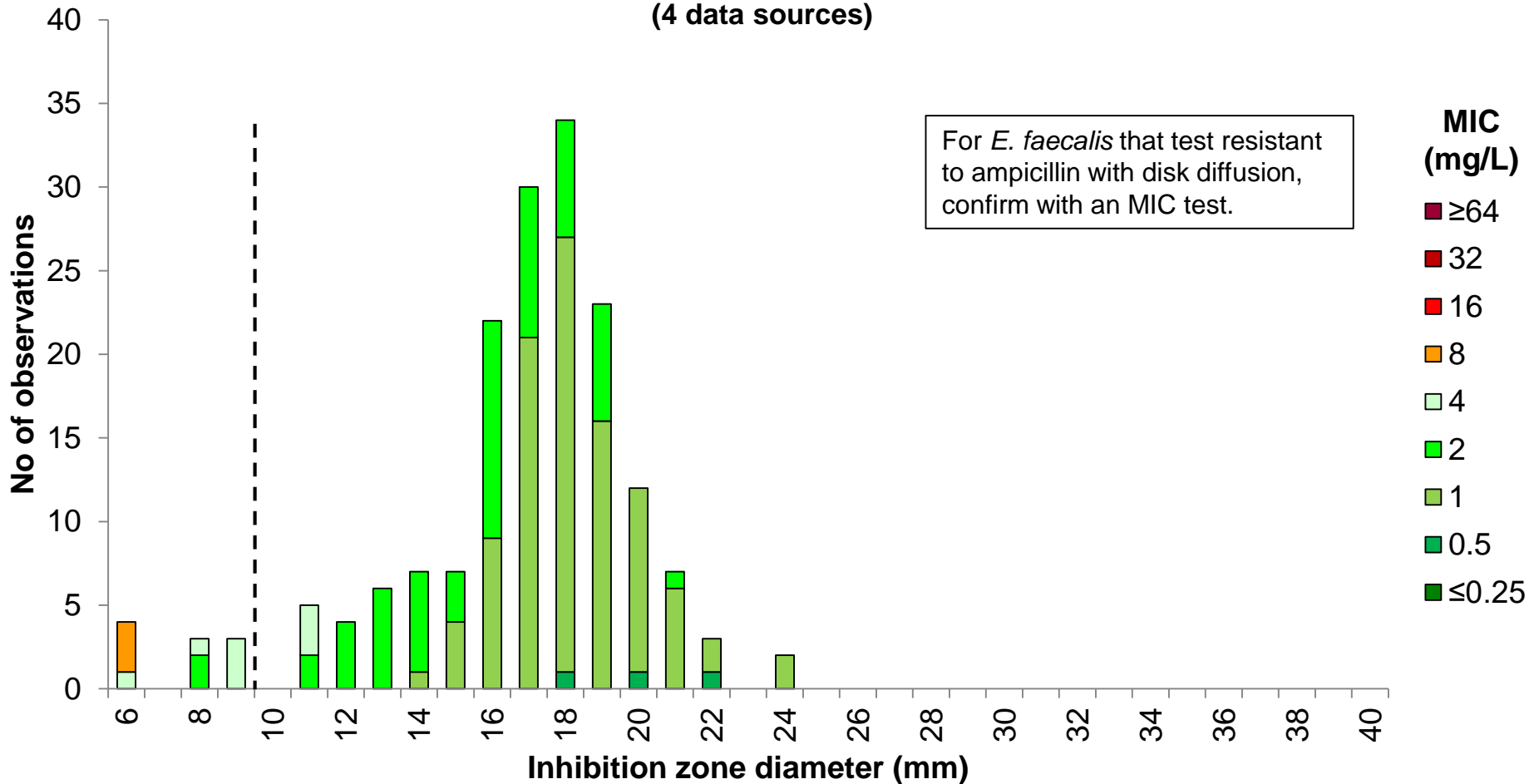
MIC  $S \leq 4, R > 4$  mg/L

Zone diameter  $S \geq 10, R < 10$  mm

# Ampicillin 2 µg vs. MIC

## *E. faecalis*, 66 isolates (172 correlates)

(4 data sources)



### Breakpoints (iv)

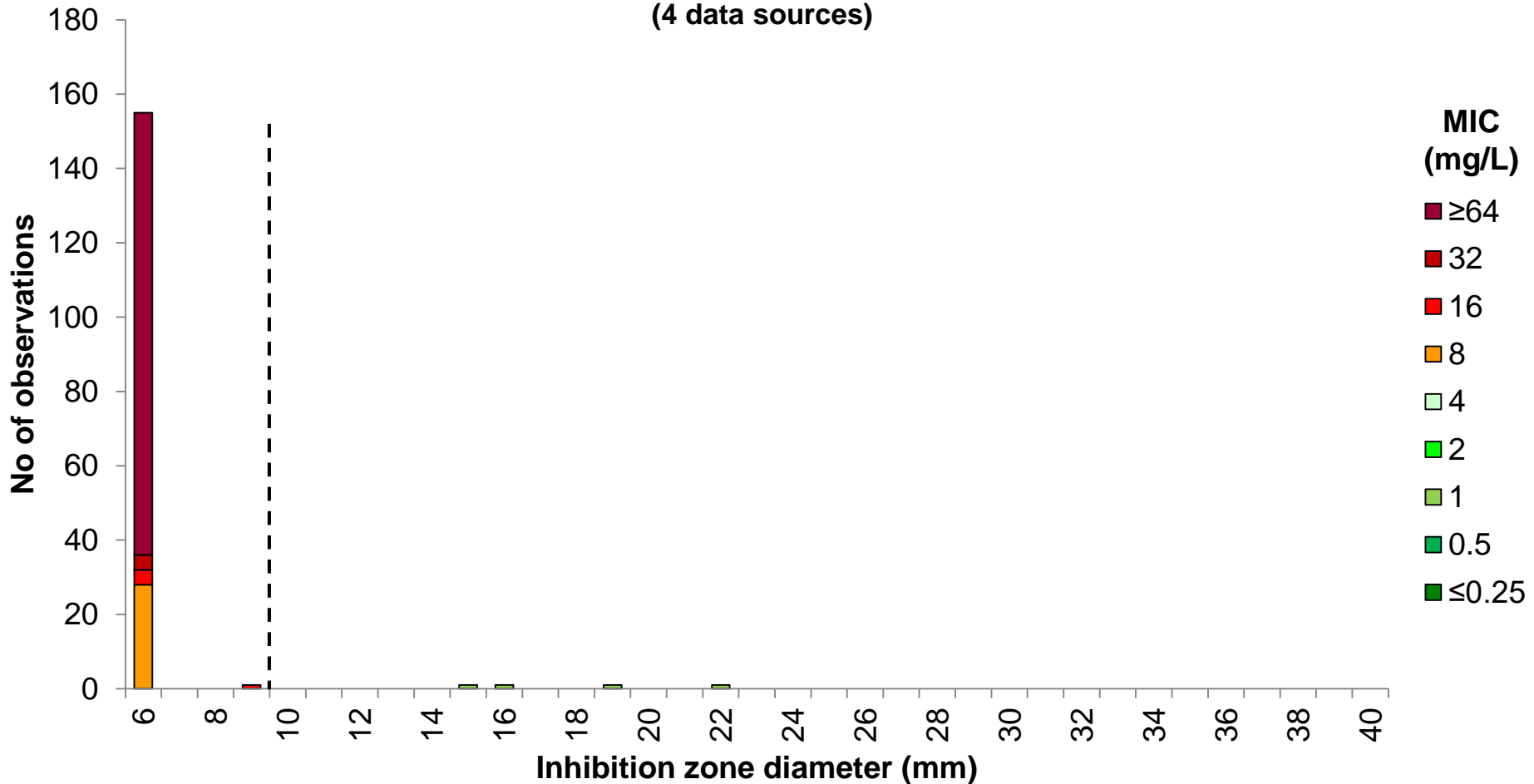
MIC S ≤ 4, R > 4 mg/L

Zone diameter S ≥ 10, R < 10 mm

# Ampicillin 2 $\mu$ g vs. MIC

## *E. faecium*, 66 isolates (160 correlates)

(4 data sources)



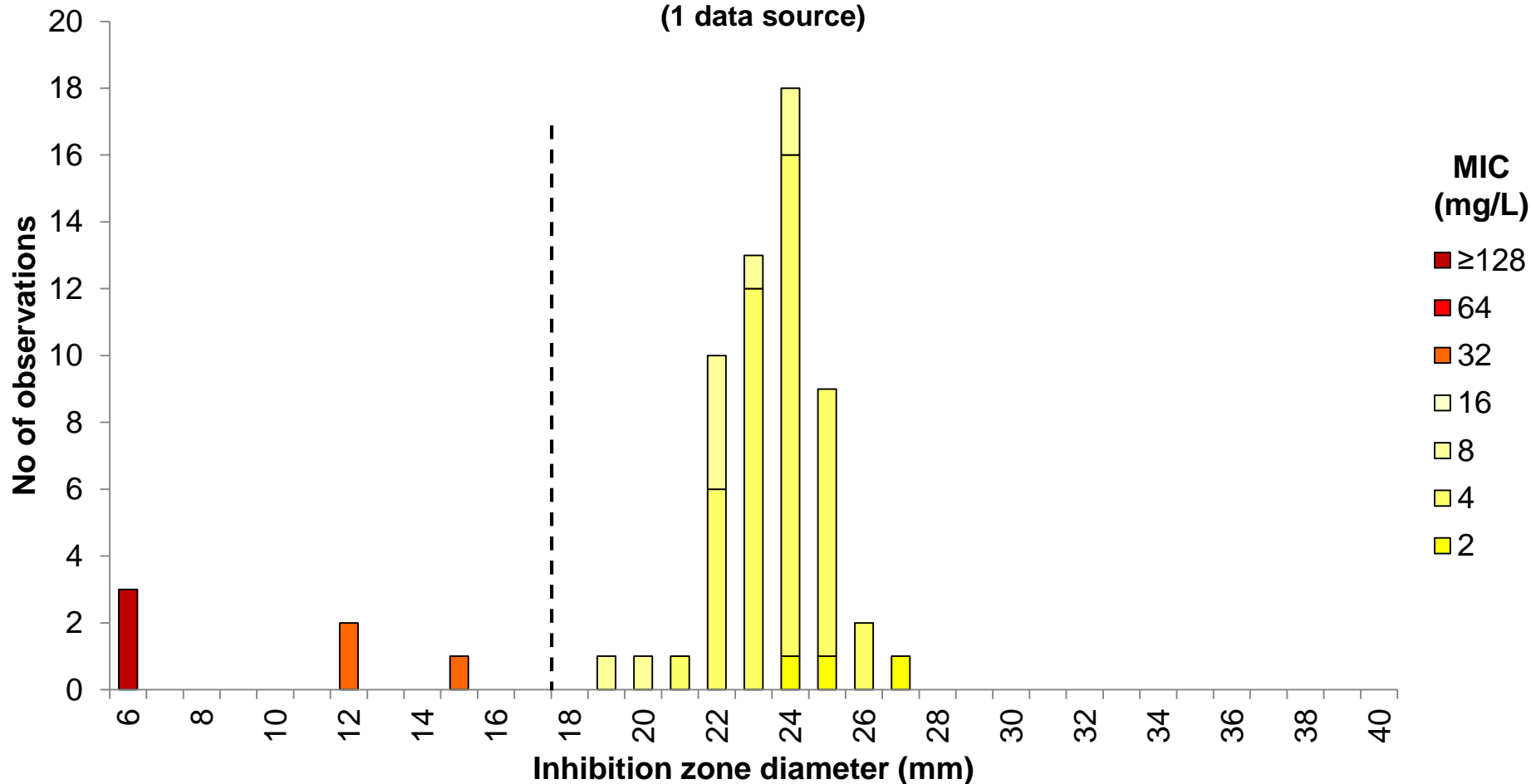
### Breakpoints (iv)

MIC S $\leq$ 4, R $>$ 4 mg/L

Zone diameter S $\geq$ 10, R $<$ 10 mm

# Piperacillin-tazobactam 30-6 µg vs. MIC *E. faecalis*, 22 isolates (62 correlates)

(1 data source)



## Breakpoints (*E. faecalis*)

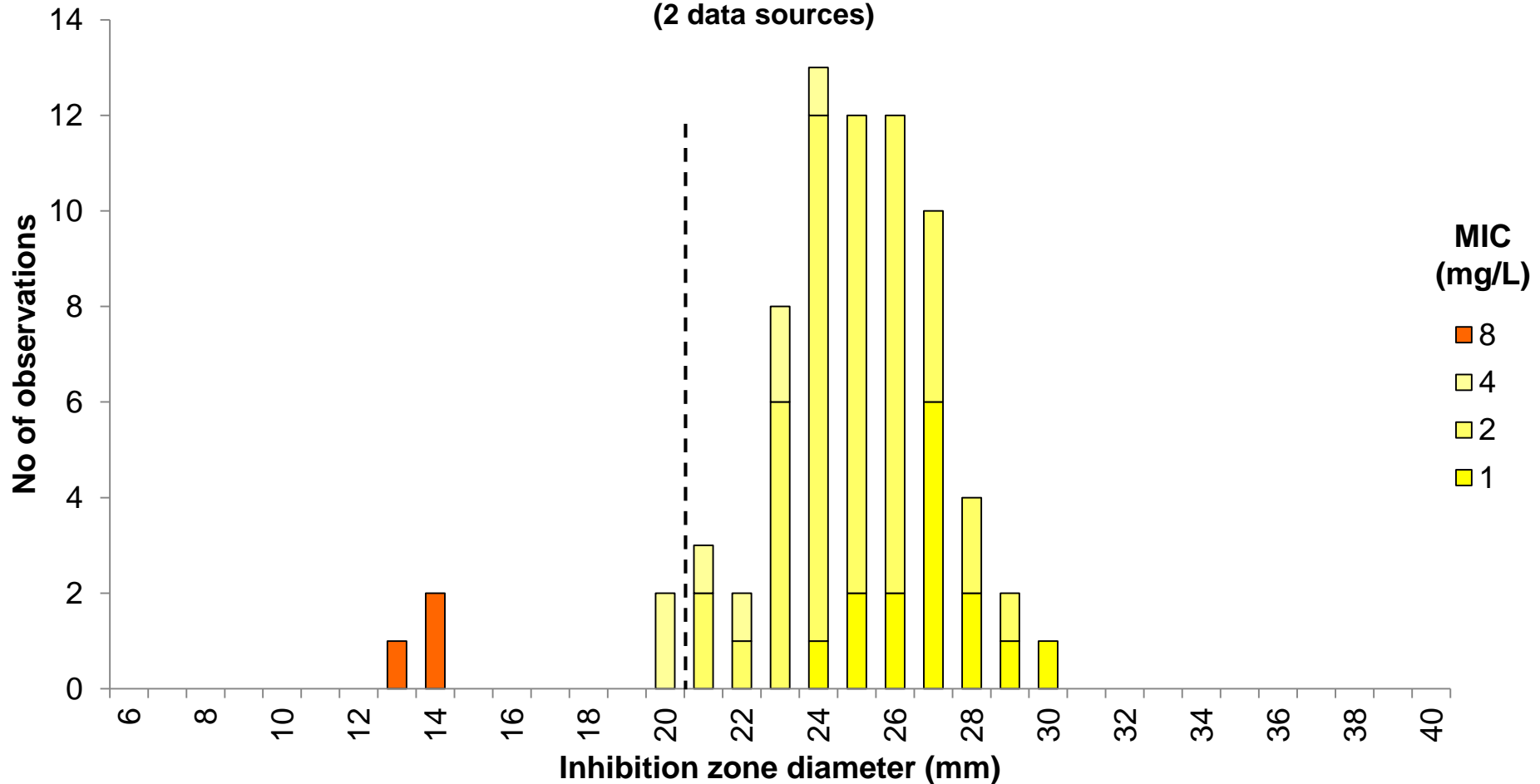
MIC  $S \leq 0.001$ ,  $R > 16$  mg/L

Zone diameter  $S \geq 50$ ,  $R < 18$  mm

# Imipenem 10 µg vs. MIC

## *E. faecalis*, 42 isolates (72 correlates)

(2 data sources)



### Breakpoints (*E. faecalis*)

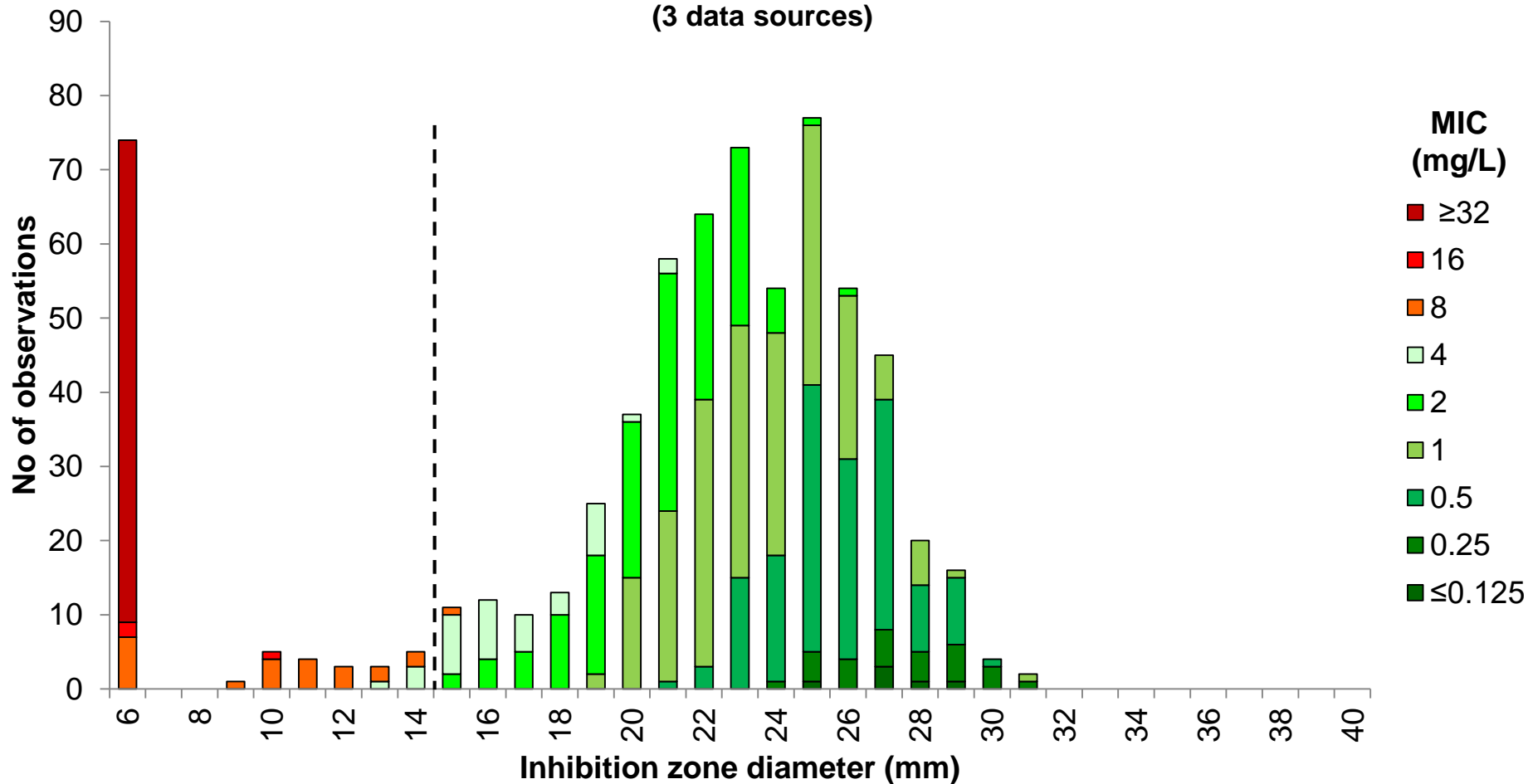
MIC S ≤ 0.001, R > 4 mg/L

Zone diameter S ≥ 50, R < 21 mm

# Ciprofloxacin 5 $\mu$ g vs. MIC

## *Enterococcus* spp., 284 isolates (670 correlates)

(3 data sources)



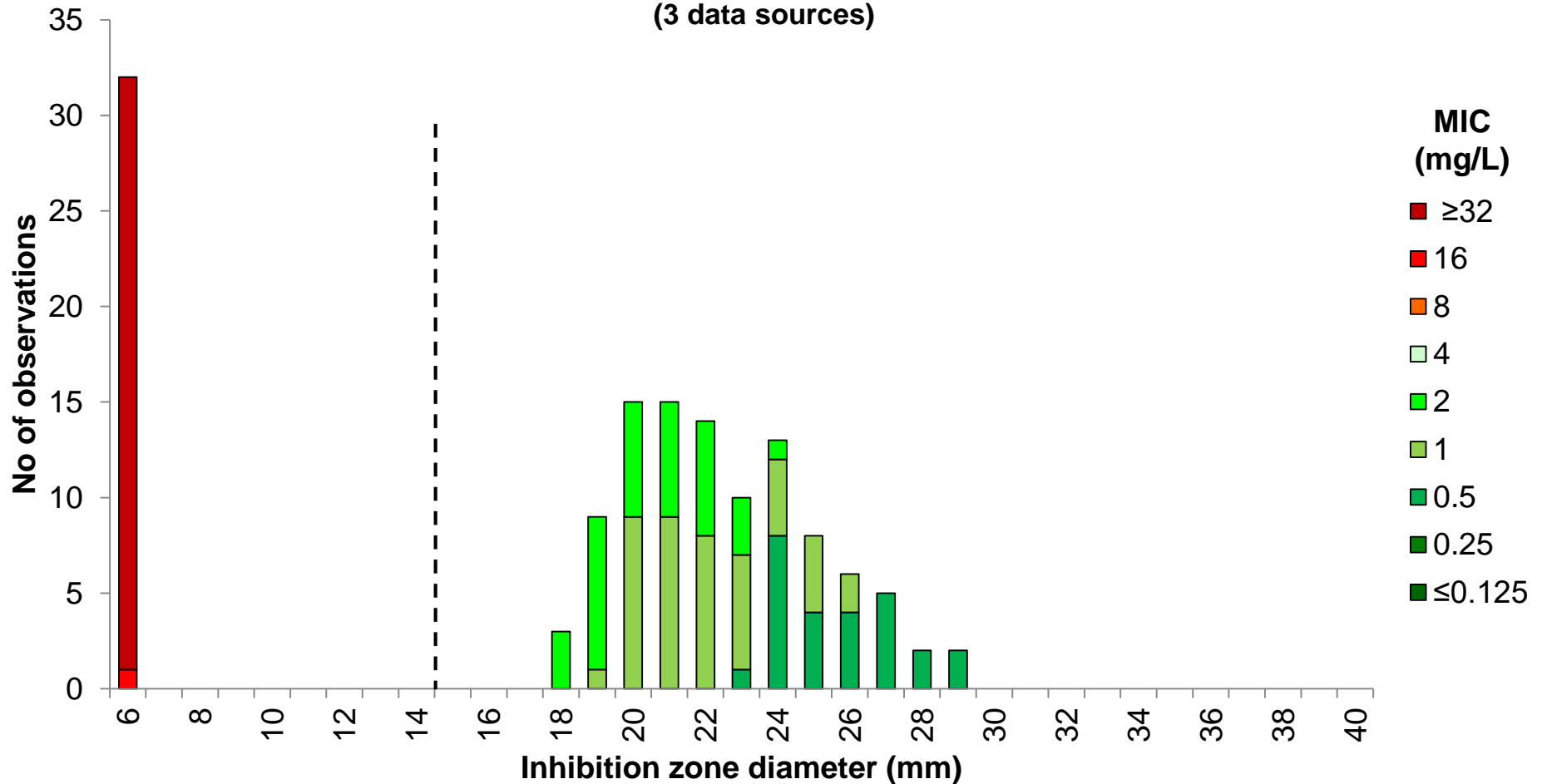
**Breakpoints (uncomplicated UTI)**

MIC	S $\leq 4$ , R $> 4$ mg/L
Zone diameter	S $\geq 15$ , R $< 15$ mm

# Ciprofloxacin 5 µg vs. MIC

## *E. faecalis*, 76 isolates (134 correlates)

(3 data sources)



### Breakpoints (uncomplicated UTI)

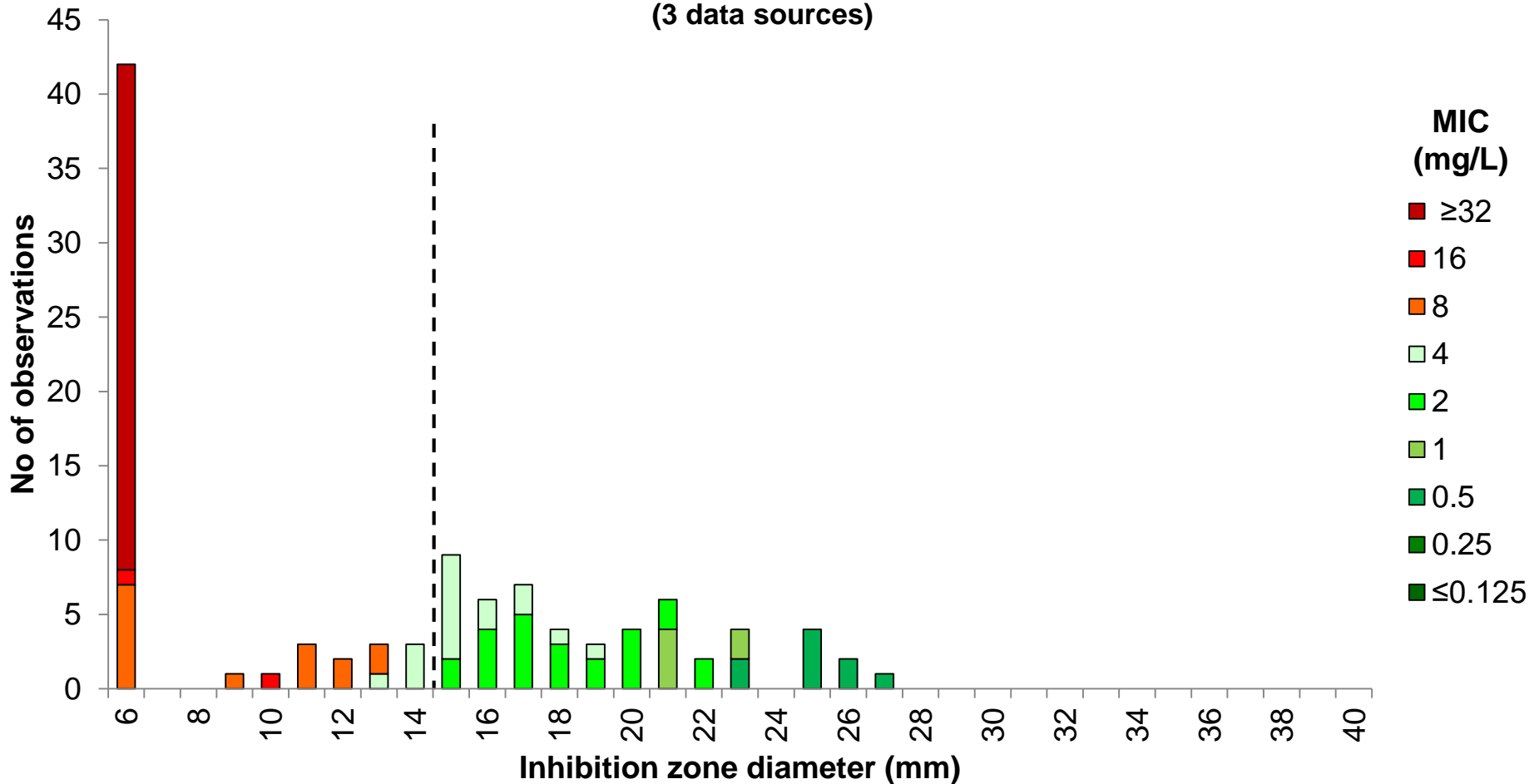
MIC                      S ≤ 4, R > 4 mg/L

Zone diameter        S ≥ 15, R < 15 mm

# Ciprofloxacin 5 µg vs. MIC

## *E. faecium*, 65 isolates (107 correlates)

(3 data sources)



### Breakpoints (uncomplicated UTI)

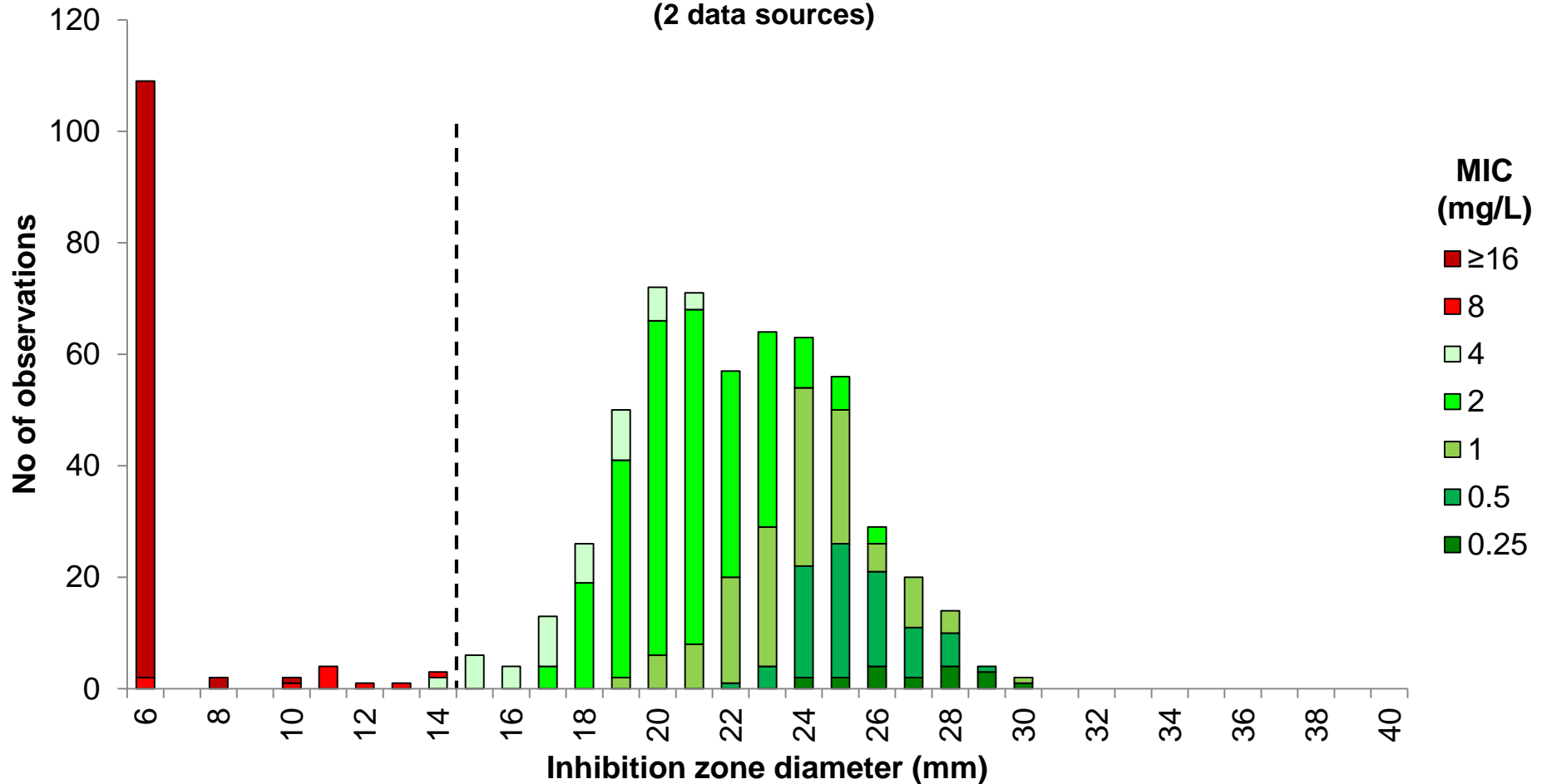
MIC S ≤ 4, R > 4 mg/L

Zone diameter S ≥ 15, R < 15 mm

# Levofloxacin 5 $\mu$ g vs. MIC

## *Enterococcus* spp., 240 isolates (673 correlates)

(2 data sources)



### Breakpoints (uncomplicated UTI)

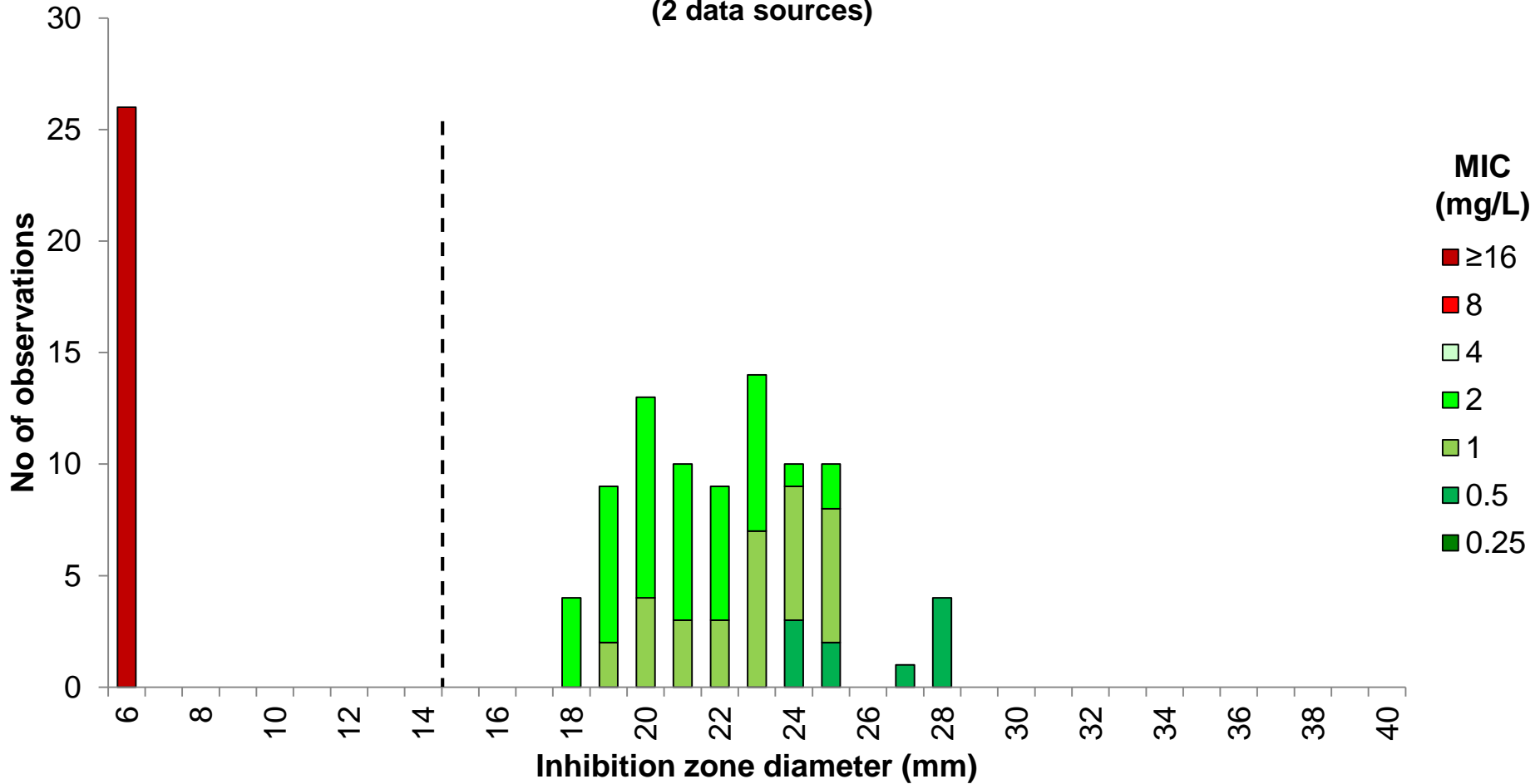
MIC  $S \leq 4$ ,  $R > 4$  mg/L

Zone diameter  $S \geq 15$ ,  $R < 15$  mm

# Levofloxacin 5 $\mu$ g vs. MIC

## *E. faecalis*, 44 isolates (110 correlates)

(2 data sources)



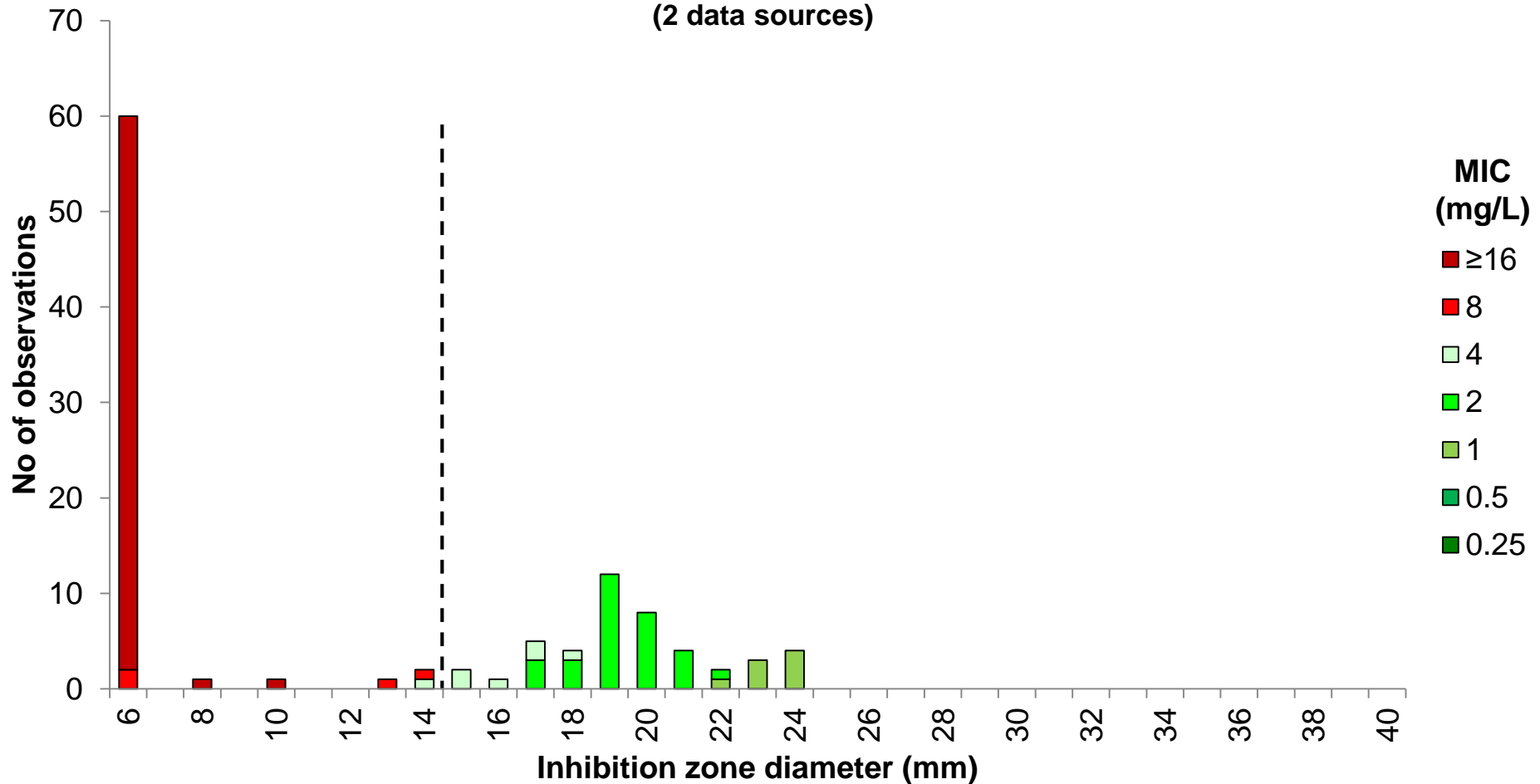
### Breakpoints (uncomplicated UTI)

MIC  $S \leq 4$ ,  $R > 4$  mg/L

Zone diameter  $S \geq 15$ ,  $R < 15$  mm

# Levofloxacin 5 $\mu$ g vs. MIC *E. faecium*, 45 isolates (110 correlates)

(2 data sources)



## Breakpoints (uncomplicated UTI)

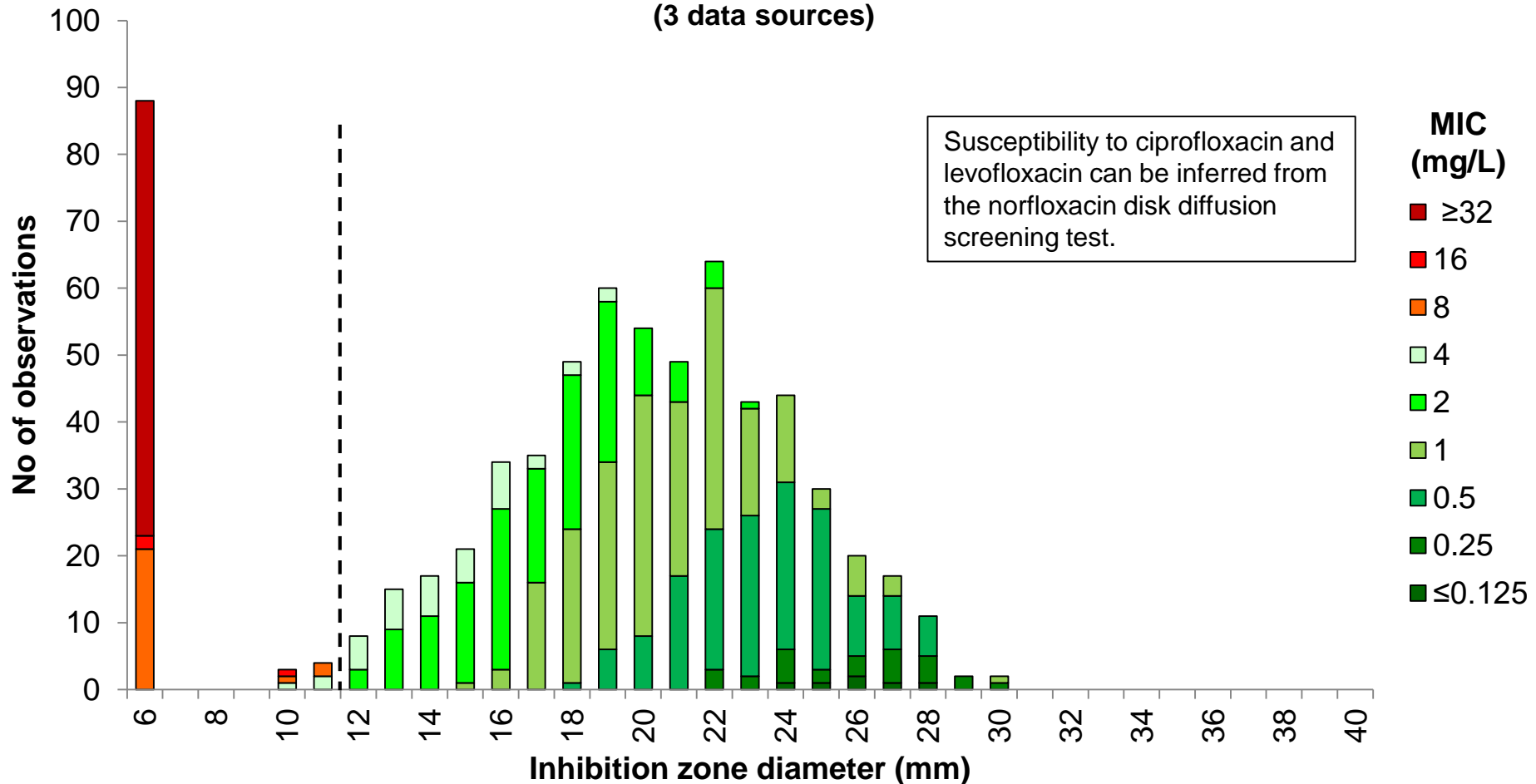
MIC  $S \leq 4$ ,  $R > 4$  mg/L

Zone diameter  $S \geq 15$ ,  $R < 15$  mm

# Norfloxacin 10 µg vs. Ciprofloxacin MIC

## *Enterococcus* spp., 284 isolates (670 correlates)

(3 data sources)



### Breakpoints (uncomplicated UTI)

Ciprofloxacin MIC

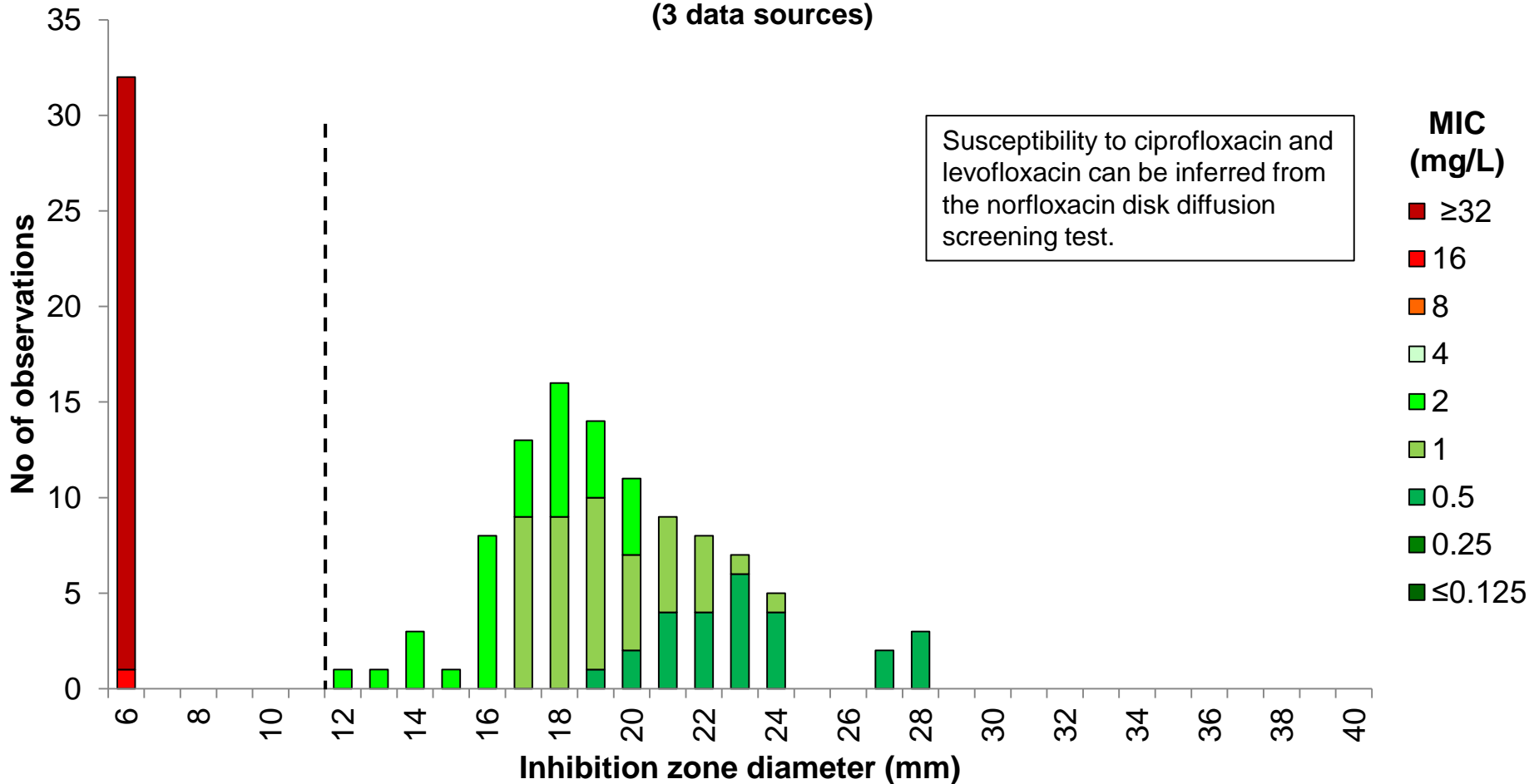
$S \leq 4$ ,  $R > 4$  mg/L

Norfloxacin zone diameter (screen)

$S \geq 12$ ,  $R < 12$  mm

# Norfloxacin 10 µg vs. Ciprofloxacin MIC *E. faecalis*, 76 isolates (134 correlates)

(3 data sources)



## Breakpoints (uncomplicated UTI)

Ciprofloxacin MIC

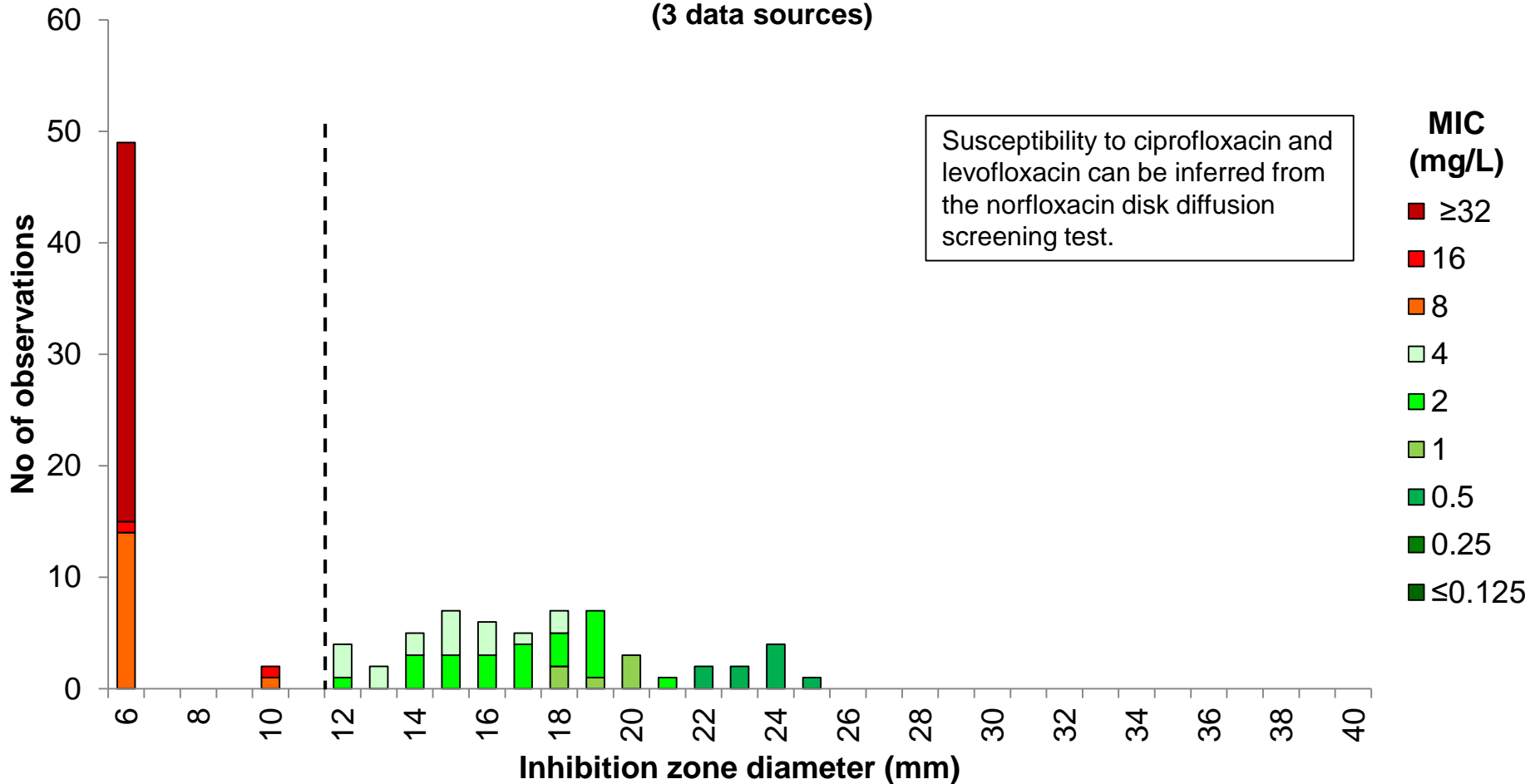
$S \leq 4$ ,  $R > 4$  mg/L

Norfloxacin zone diameter (screen)

$S \geq 12$ ,  $R < 12$  mm

# Norfloxacin 10 µg vs. Ciprofloxacin MIC *E. faecium*, 65 isolates (107 correlates)

(3 data sources)



## Breakpoints (uncomplicated UTI)

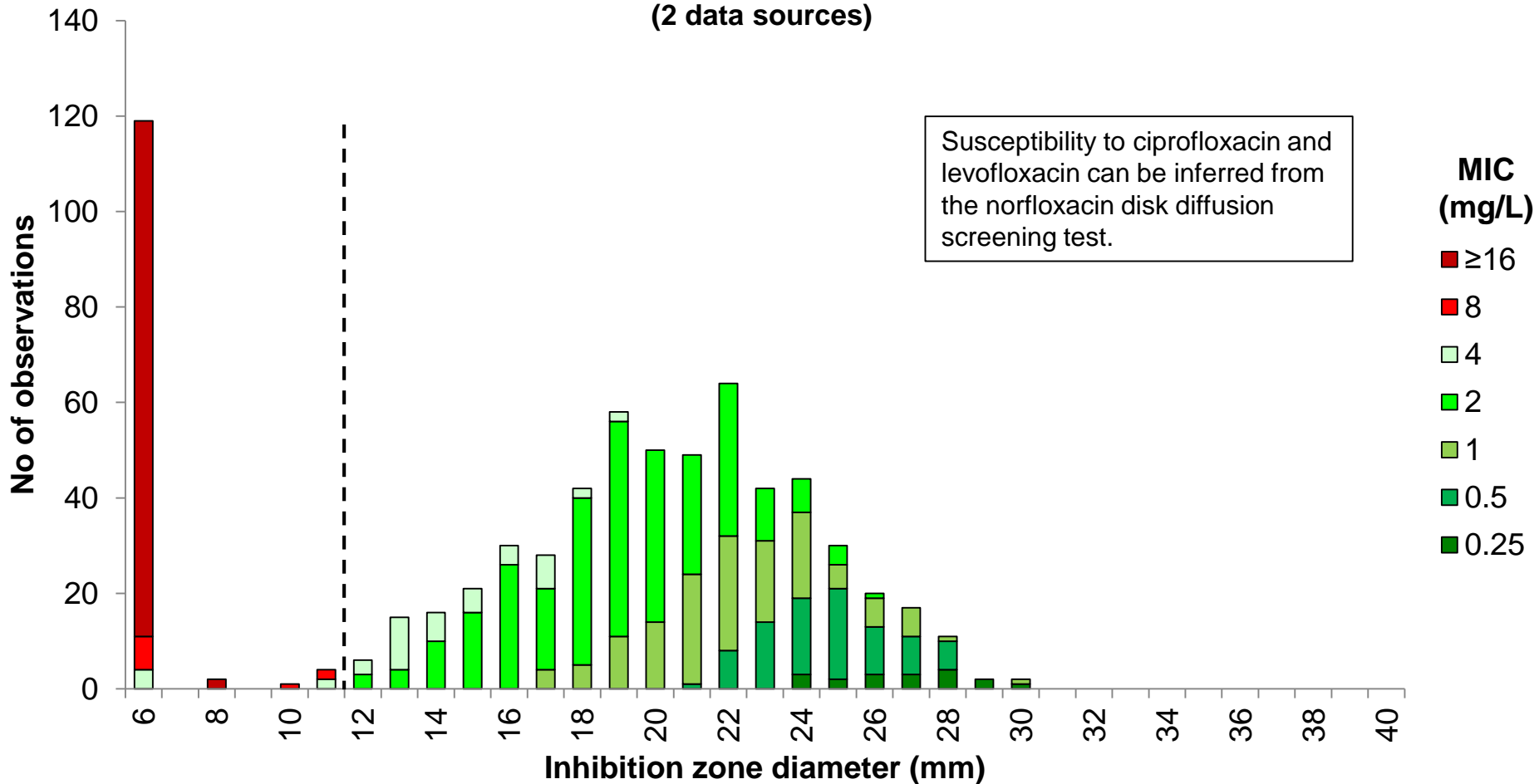
Ciprofloxacin MIC  $S \leq 4$ ,  $R > 4$  mg/L

Norfloxacin zone diameter (screen)  $S \geq 12$ ,  $R < 12$  mm

# Norfloxacin 10 µg vs. Levofloxacin MIC

## *Enterococcus* spp., 240 isolates (673 correlates)

(2 data sources)



### Breakpoints (uncomplicated UTI)

Levofloxacin MIC

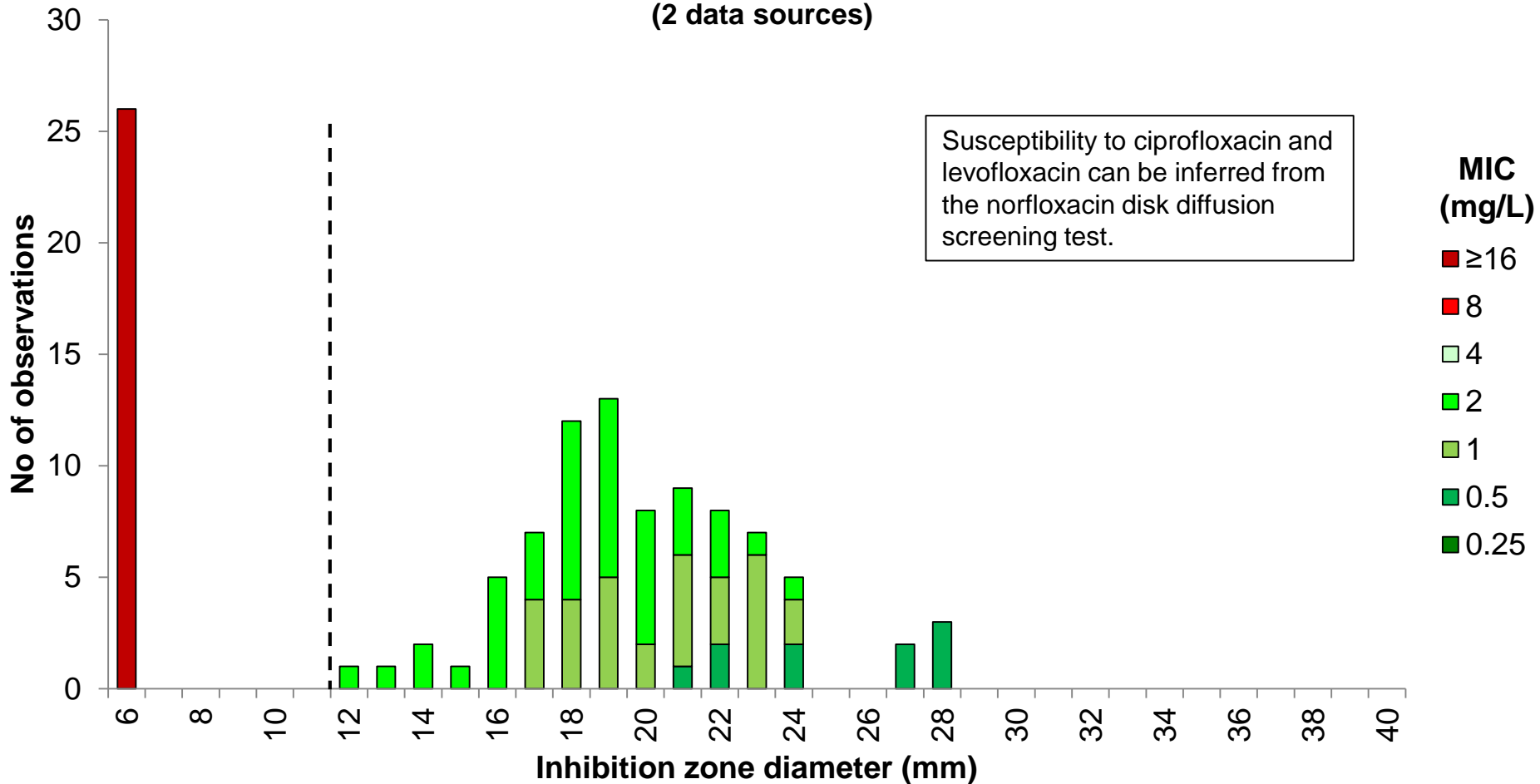
$S \leq 4$ ,  $R > 4$  mg/L

Norfloxacin zone diameter (screen)

$S \geq 12$ ,  $R < 12$  mm

# Norfloxacin 10 µg vs. Levofloxacin MIC *E. faecalis*, 44 isolates (110 correlates)

(2 data sources)



## Breakpoints (uncomplicated UTI)

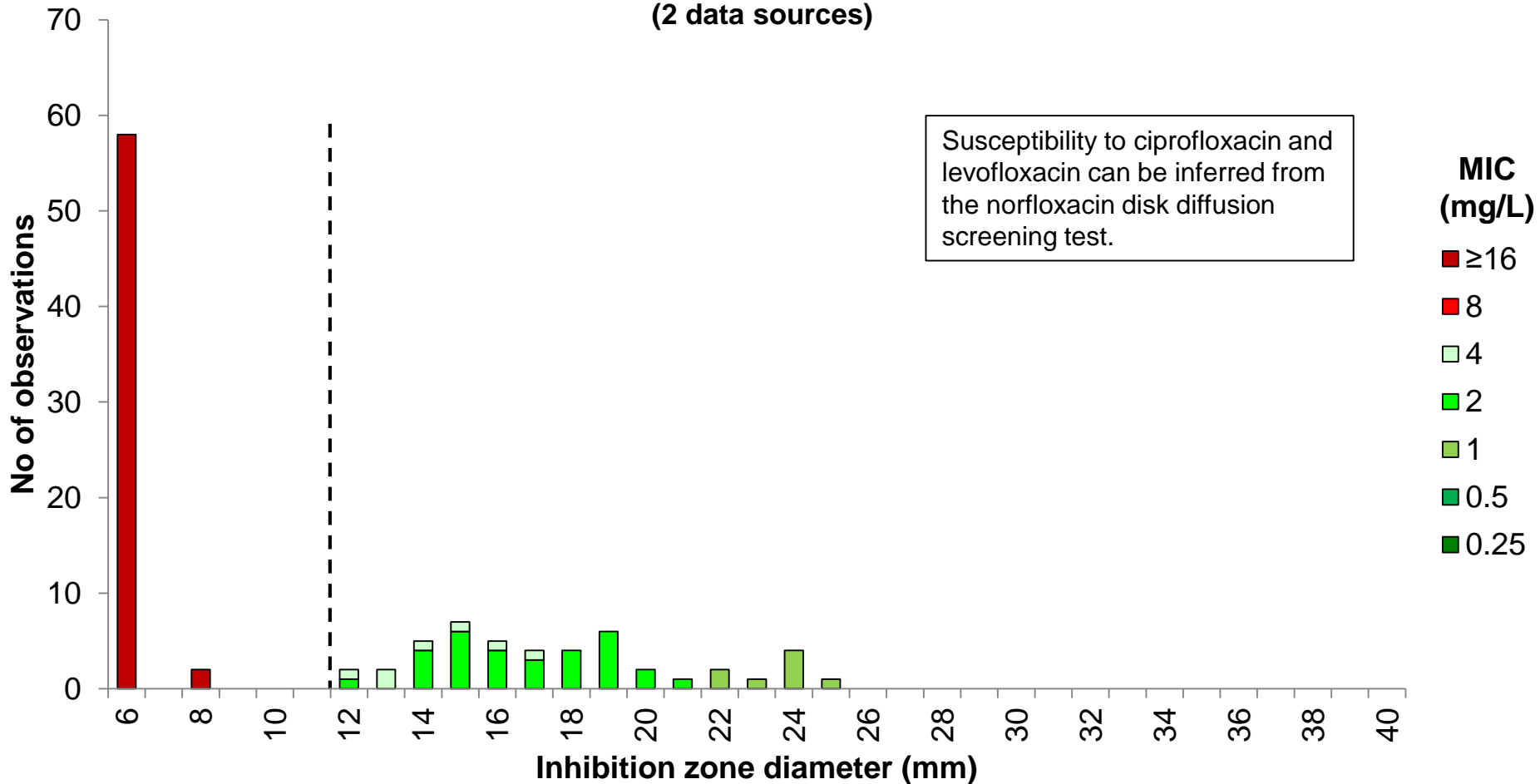
Levofloxacin MIC

$S \leq 4$ ,  $R > 4$  mg/L

Norfloxacin zone diameter (screen)  $S \geq 12$ ,  $R < 12$  mm

# Norfloxacin 10 µg vs. Levofloxacin MIC *E. faecium*, 45 isolates (106 correlates)

(2 data sources)



## Breakpoints (uncomplicated UTI)

Levofloxacin MIC

$S \leq 4$ ,  $R > 4$  mg/L

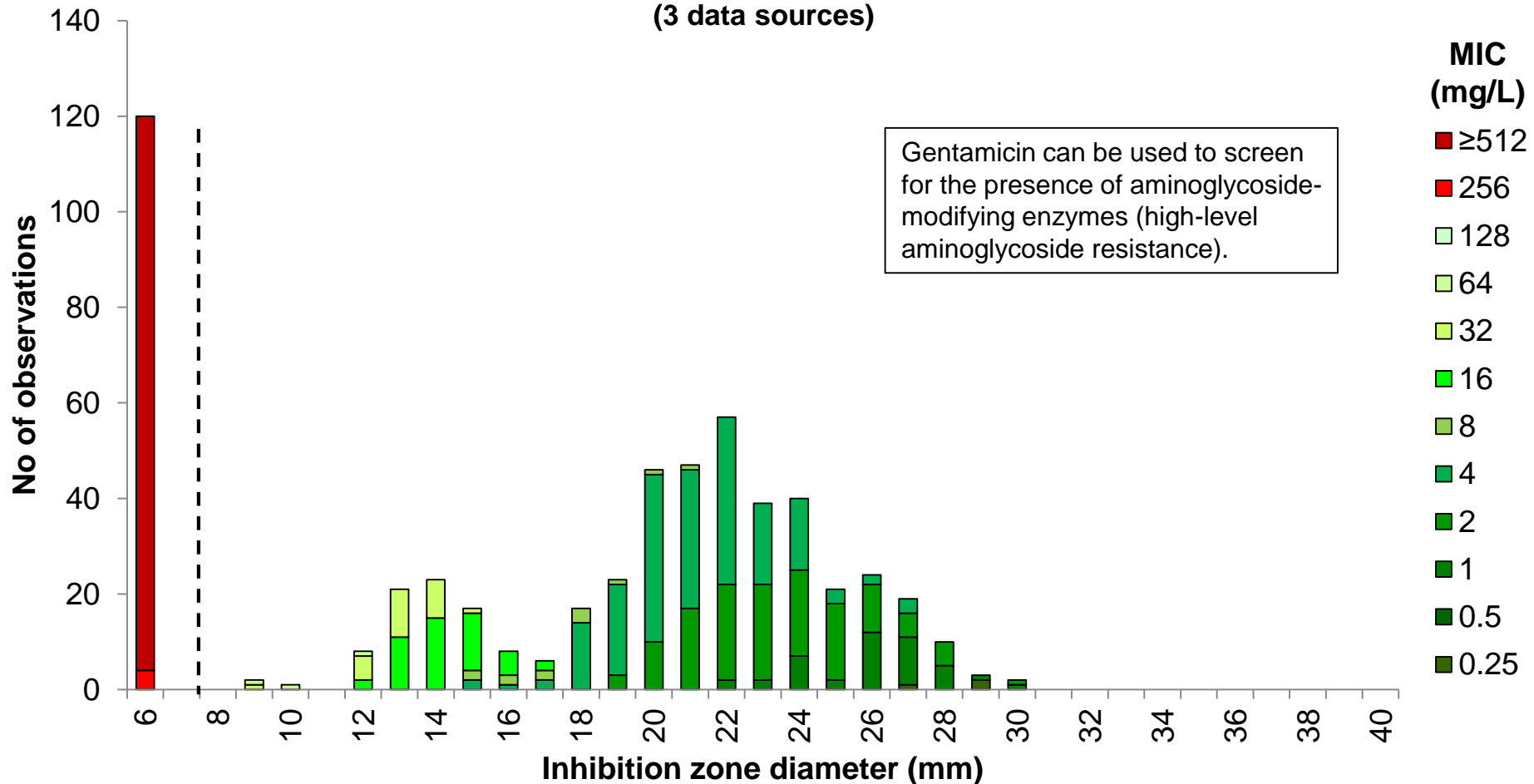
Norfloxacin zone diameter (screen)

$S \geq 12$ ,  $R < 12$  mm

# Gentamicin 30 µg vs. MIC

## *Enterococcus* spp., 297 isolates (554 correlates)

(3 data sources)

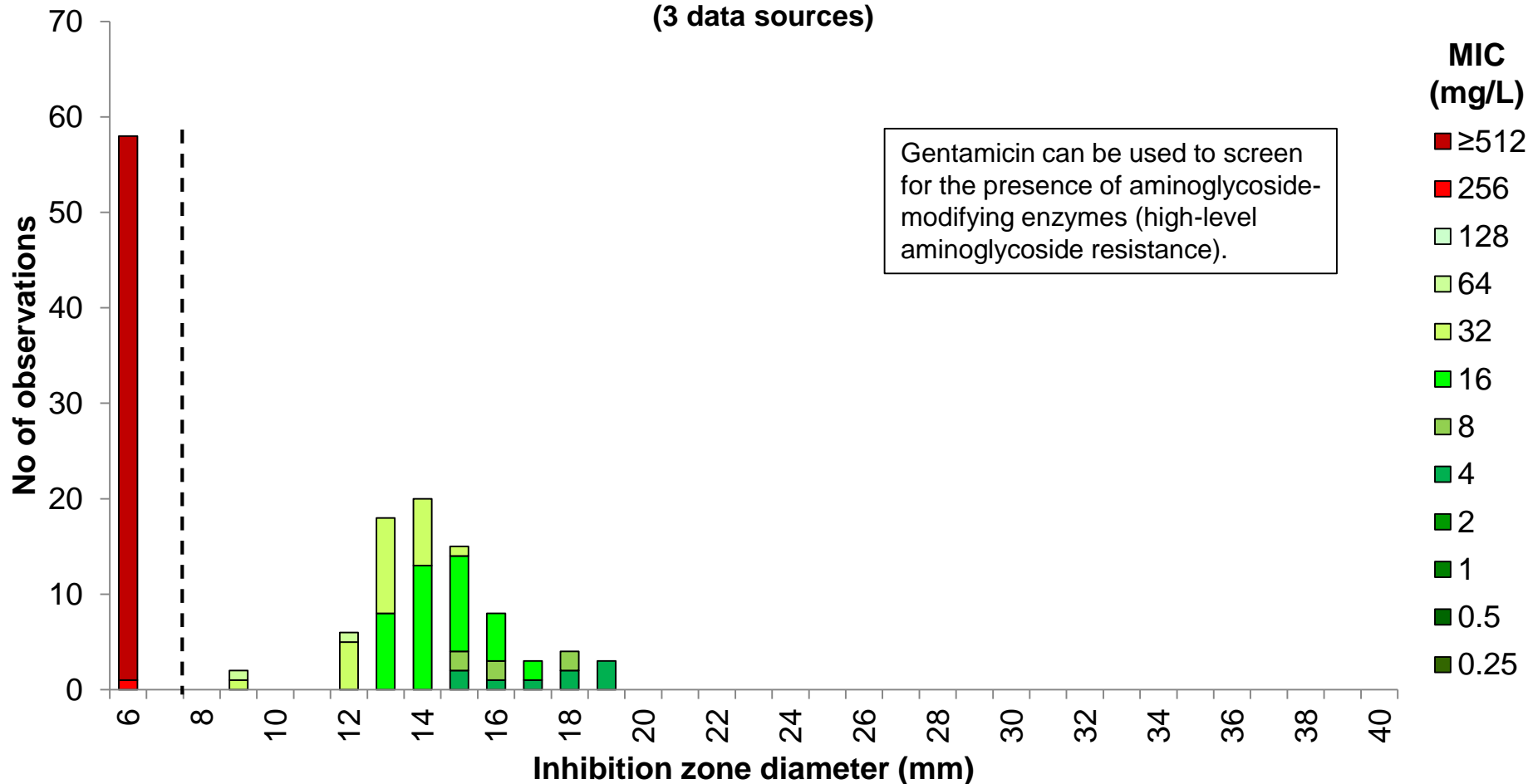


<b>Breakpoints</b>	
MIC (screen)	>128 mg/L
Zone diameter (screen)	<8 mm

# Gentamicin 30 µg vs. MIC

## *E. faecalis*, 131 isolates (137 correlates)

(3 data sources)



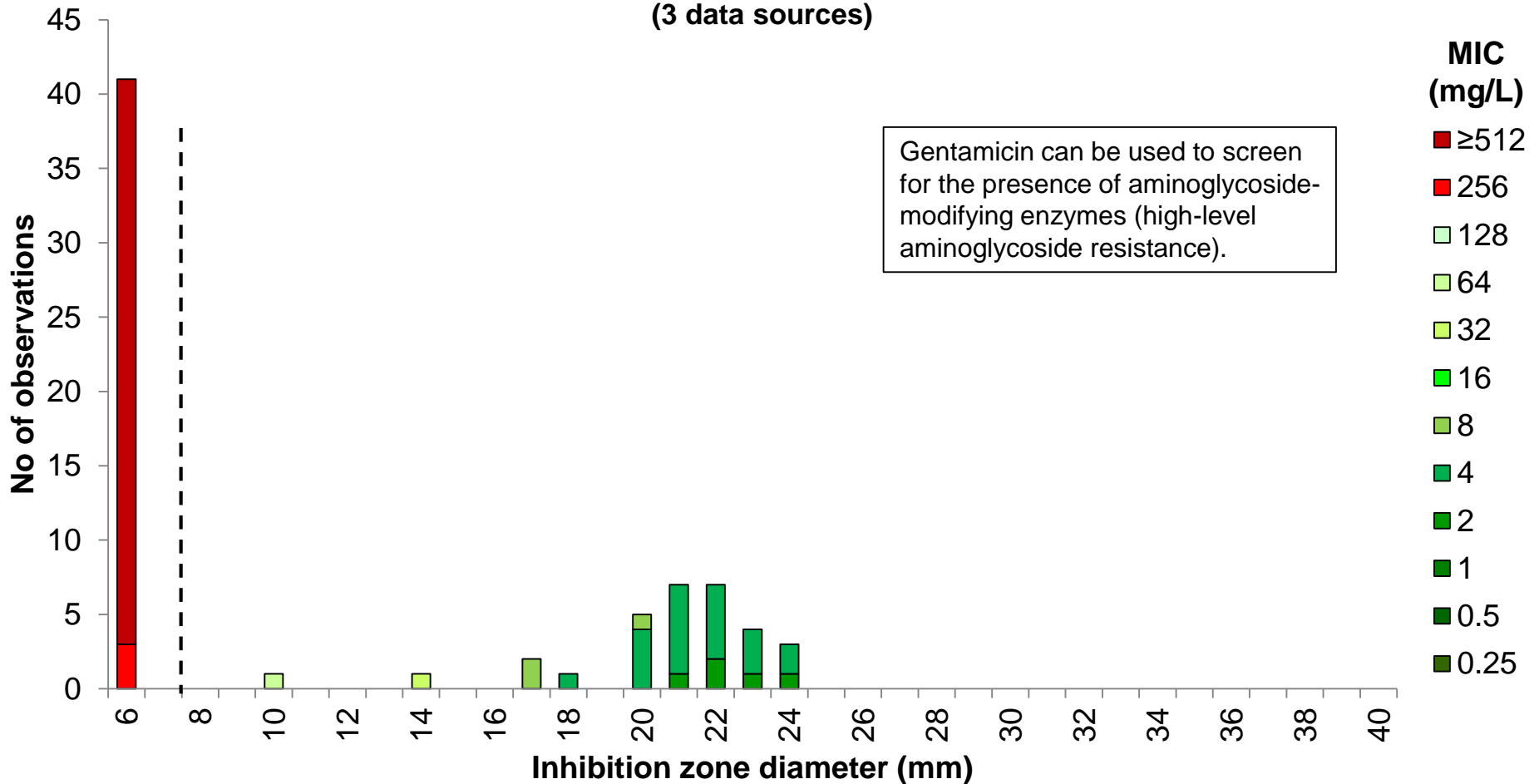
### Breakpoints

MIC (screen)	>128 mg/L
Zone diameter (screen)	<8 mm

# Gentamicin 30 µg vs. MIC

## *E. faecium*, 51 isolates (72 correlates)

(3 data sources)



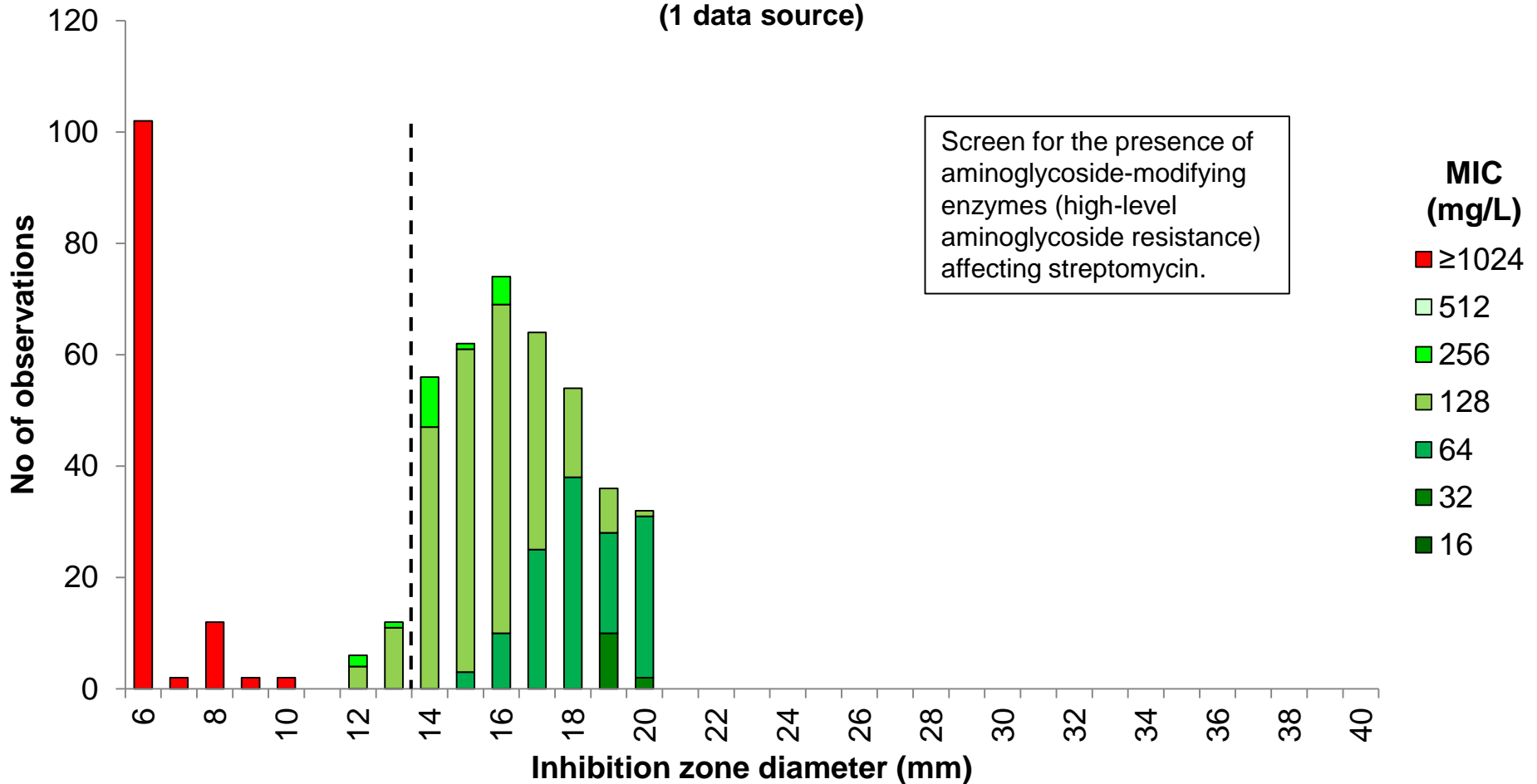
Gentamicin can be used to screen for the presence of aminoglycoside-modifying enzymes (high-level aminoglycoside resistance).

### Breakpoints

MIC (screen)	>128 mg/L
Zone diameter (screen)	<8 mm

# Streptomycin 300 µg vs. MIC *E. faecalis*, 43 isolates (516 correlates)

(1 data source)



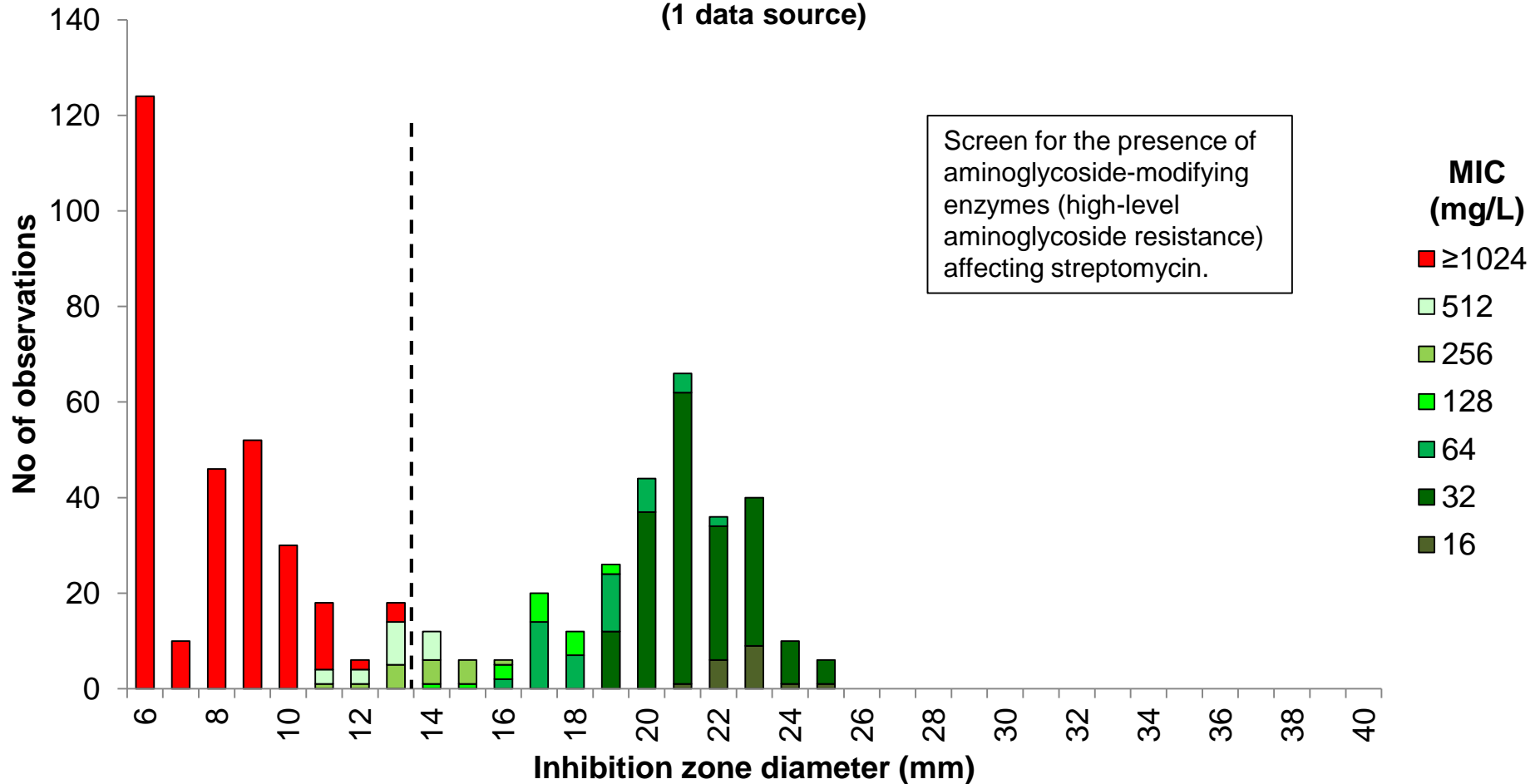
## Breakpoints

MIC (screen) >512 mg/L

Zone diameter (screen) <14 mm

# Streptomycin 300 µg vs. MIC *E. faecium*, 49 isolates (588 correlates)

(1 data source)



## Breakpoints

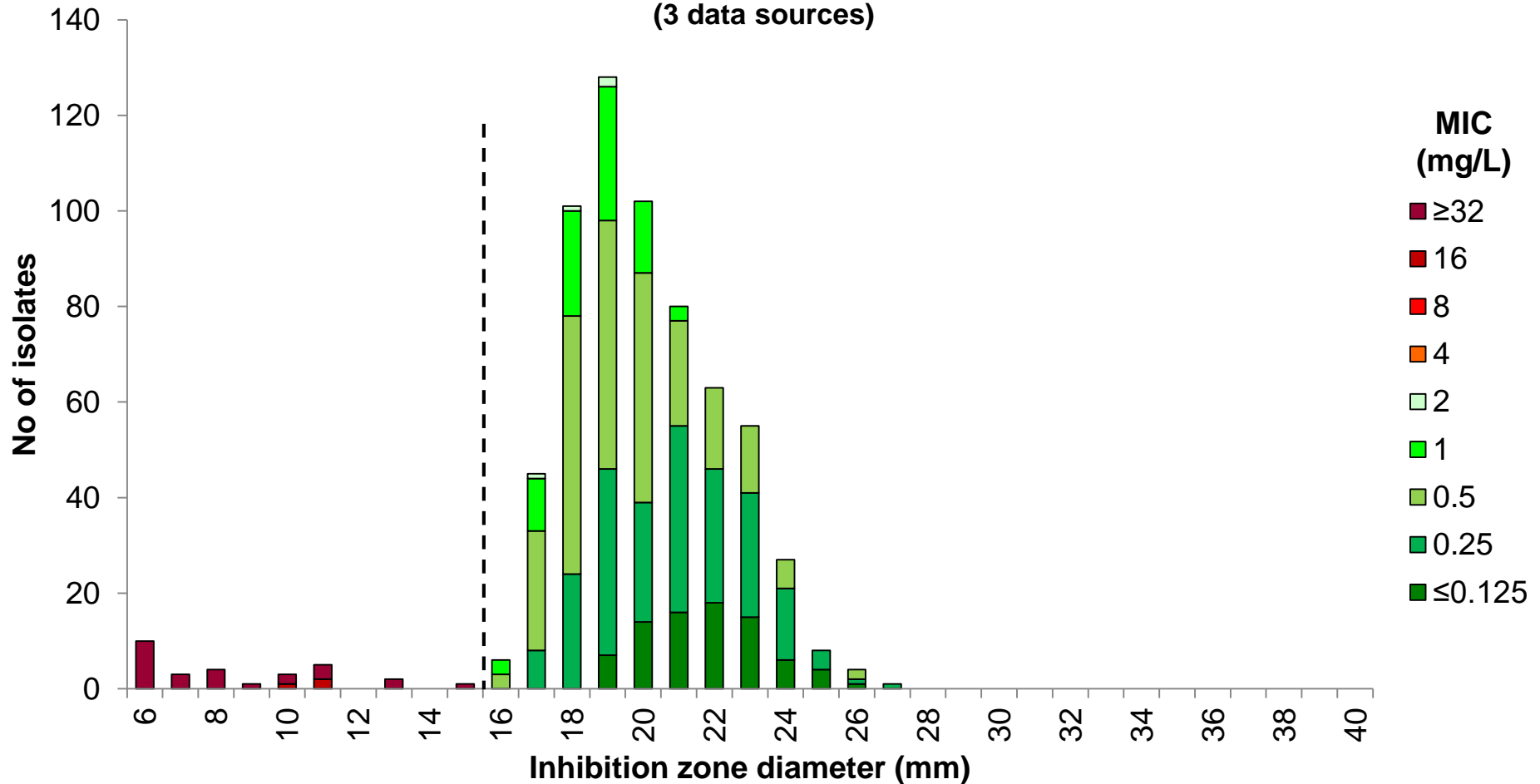
MIC (screen) >512 mg/L

Zone diameter (screen) <14 mm

# Teicoplanin 30 $\mu$ g vs. MIC

## *Enterococcus* spp., 232 isolates (649 correlates)

(3 data sources)

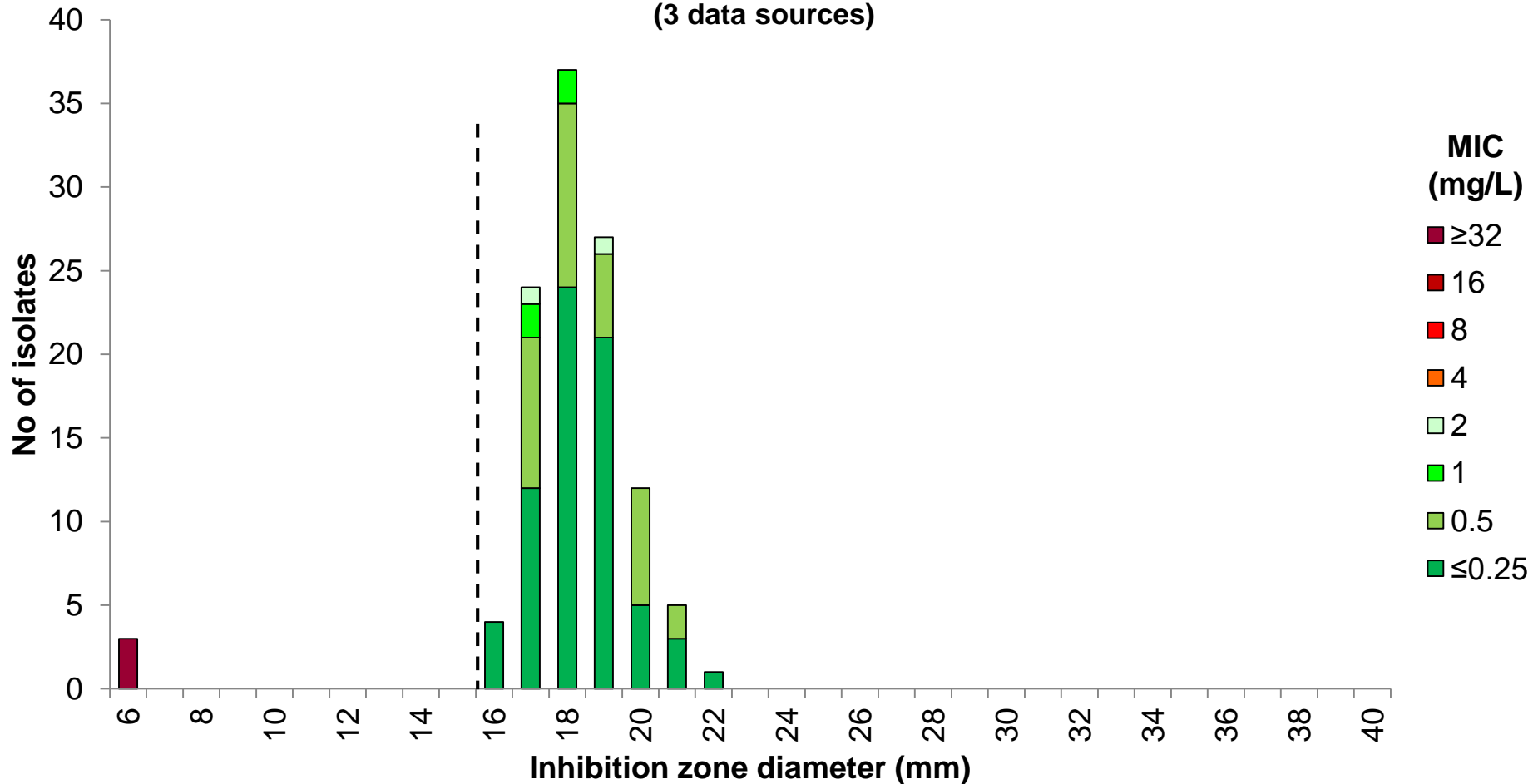


Breakpoints	
MIC	$S \leq 2$ , $R > 2$ mg/L
Zone diameter	$S \geq 16$ , $R < 16$ mm

# Teicoplanin 30 µg vs. MIC

## *E. faecalis*, 43 isolates (113 correlates)

(3 data sources)



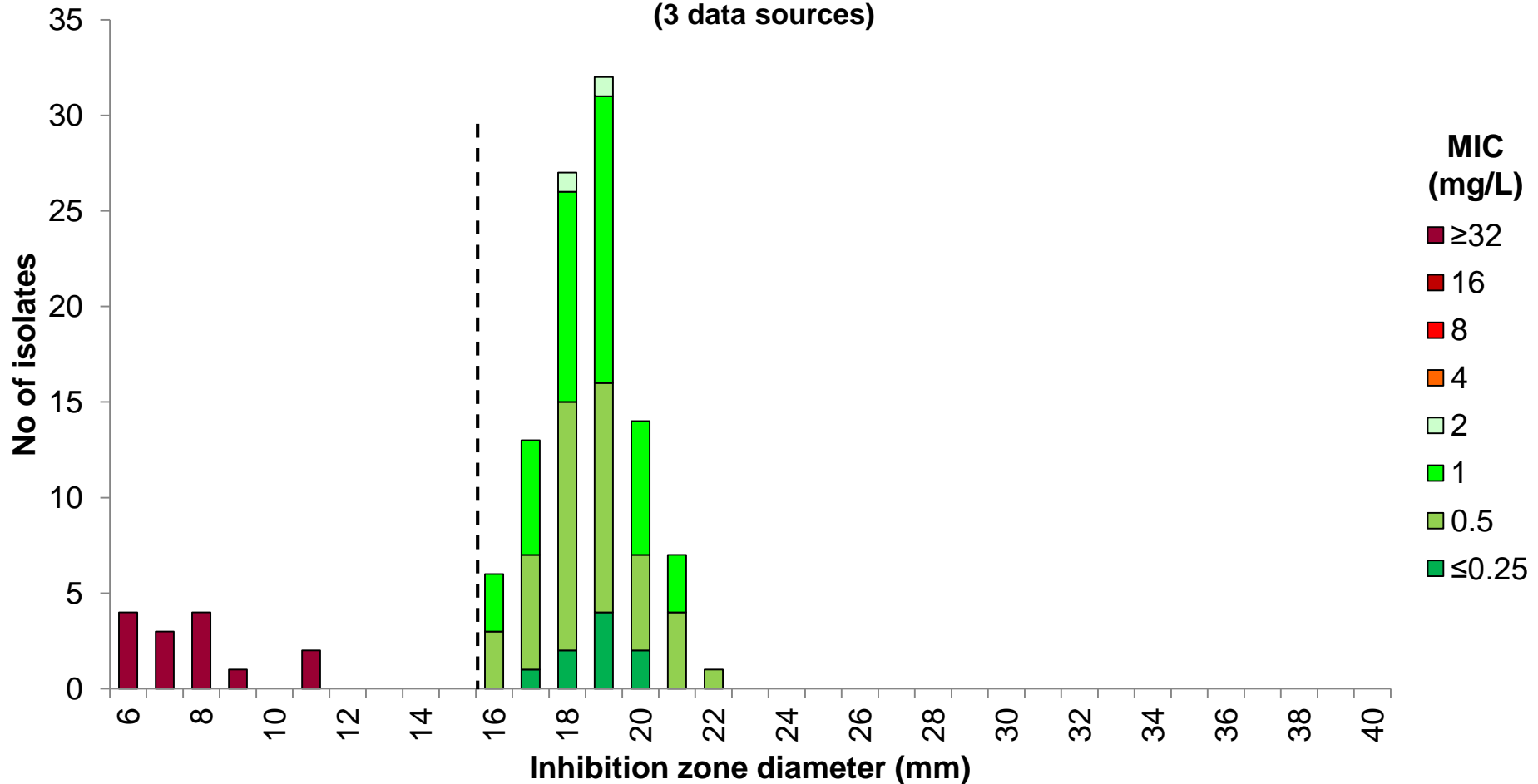
### Breakpoints

MIC  $S \leq 2$ ,  $R > 2$  mg/L

Zone diameter  $S \geq 16$ ,  $R < 16$  mm

# Teicoplanin 30 µg vs. MIC *E. faecium*, 50 isolates (114 correlates)

(3 data sources)



## Breakpoints

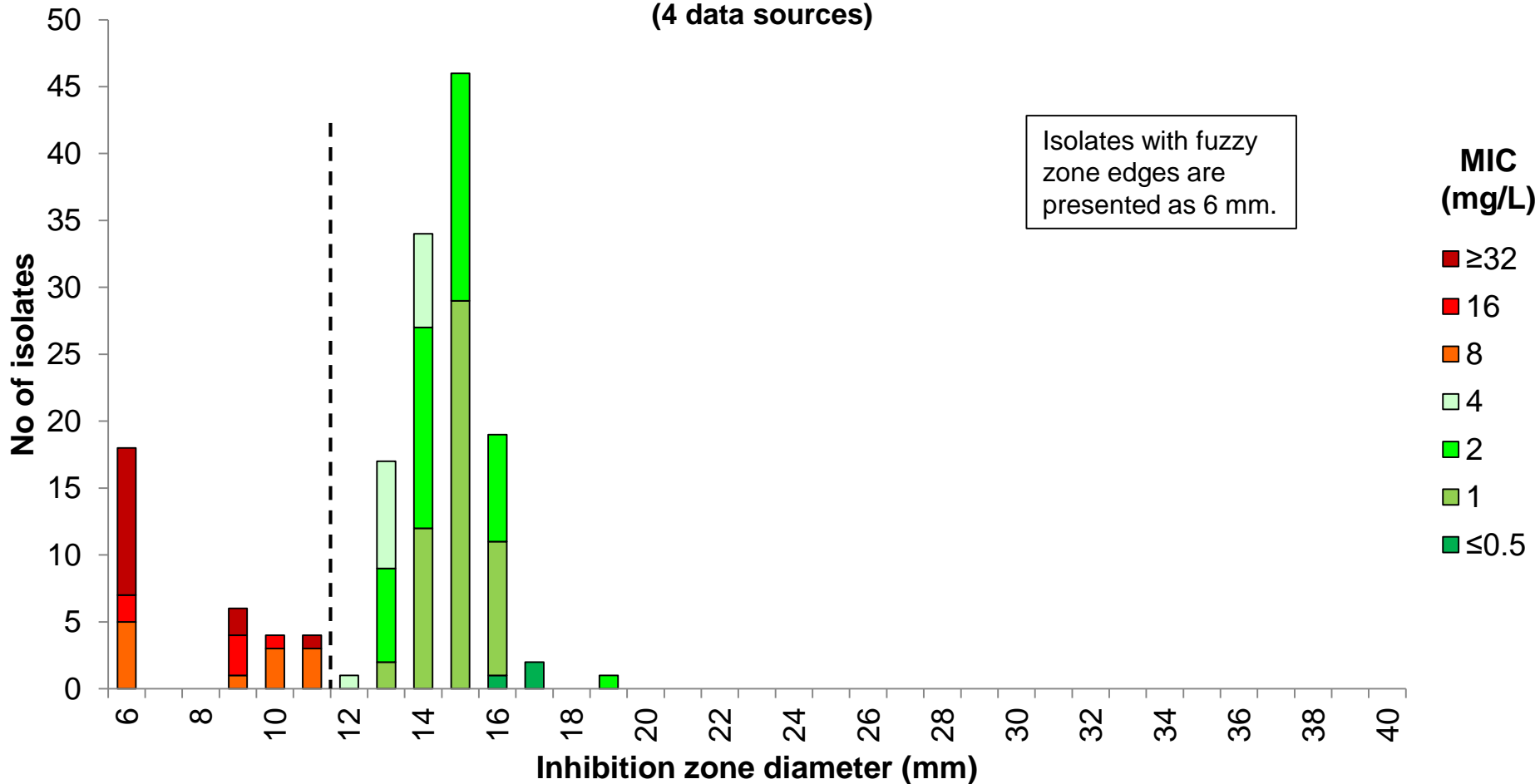
MIC S ≤ 2, R > 2 mg/L

Zone diameter S ≥ 16, R < 16 mm

# Vancomycin 5 µg vs. MIC

## *E. faecalis*, 87 isolates (152 correlates)

(4 data sources)



### Breakpoints (*E. faecalis*)

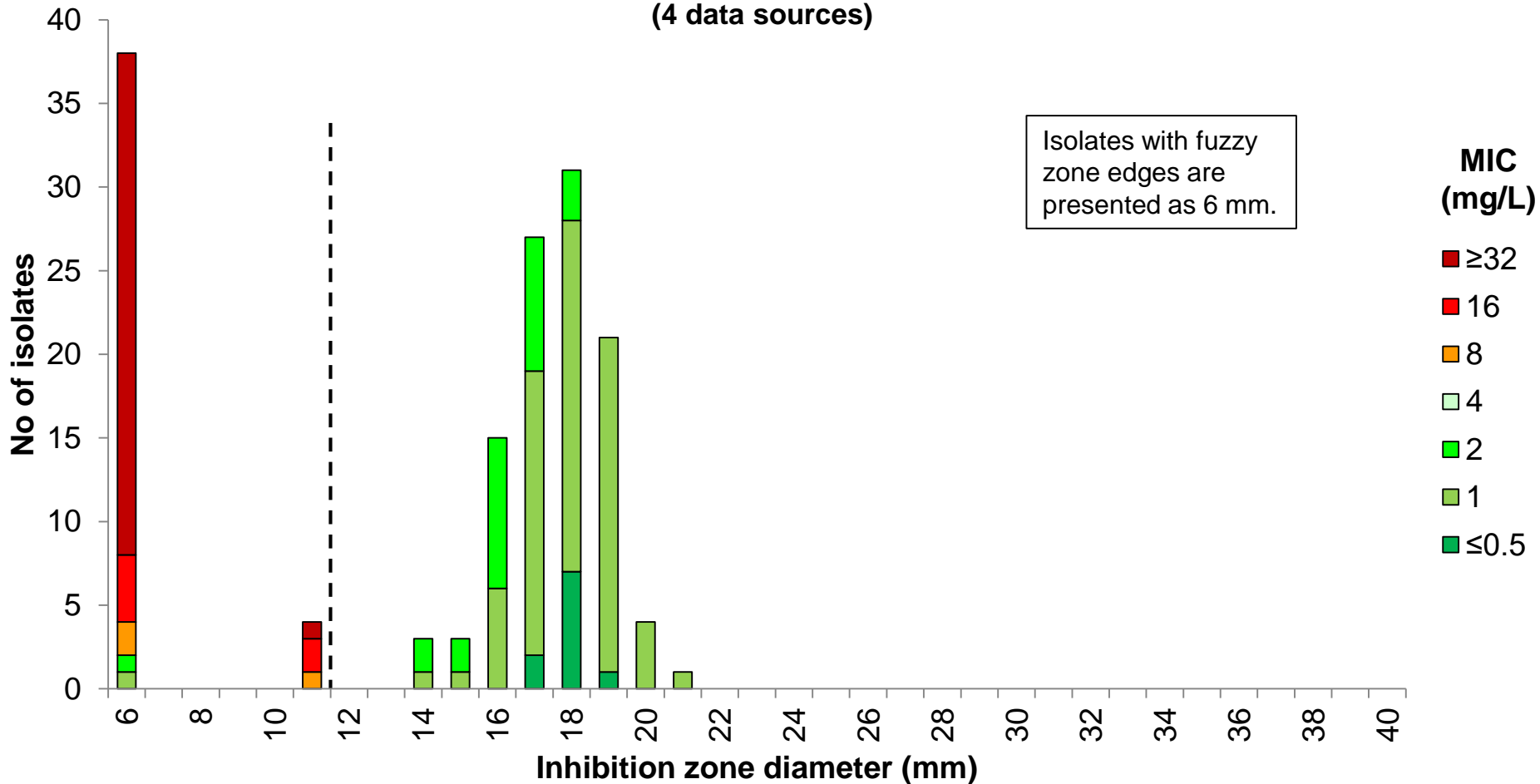
MIC S ≤ 4, R > 4 mg/L

Zone diameter S ≥ 12, R < 12 mm

# Vancomycin 5 µg vs. MIC

## *E. faecium*, 87 isolates (147 correlates)

(4 data sources)



### Breakpoints (*E. faecium*)

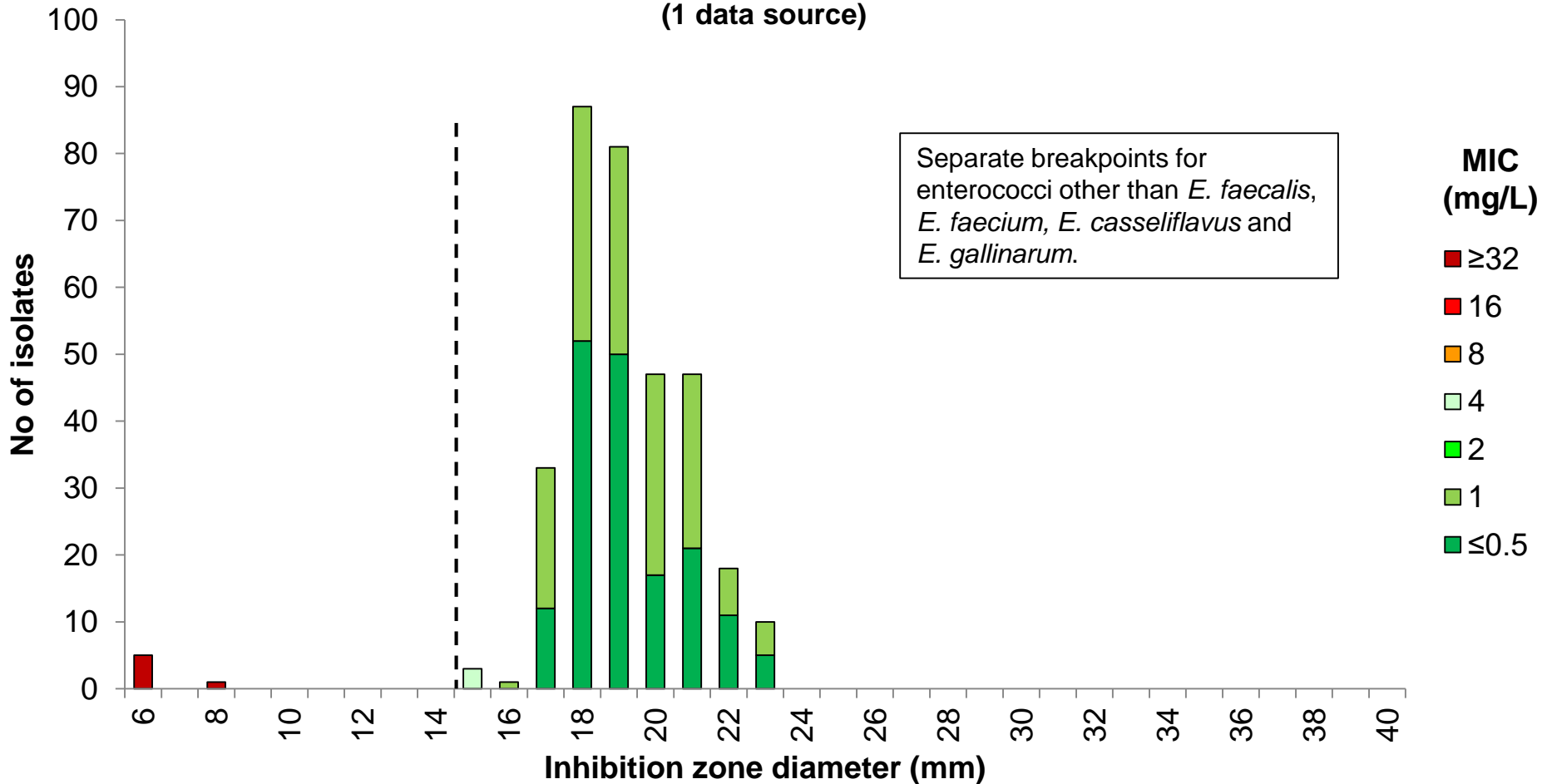
MIC  $S \leq 4$ ,  $R > 4$  mg/L

Zone diameter  $S \geq 12$ ,  $R < 12$  mm

# Vancomycin 5 µg vs. MIC

## *Enterococcus* spp., 111 isolates (333 correlates)

(1 data source)



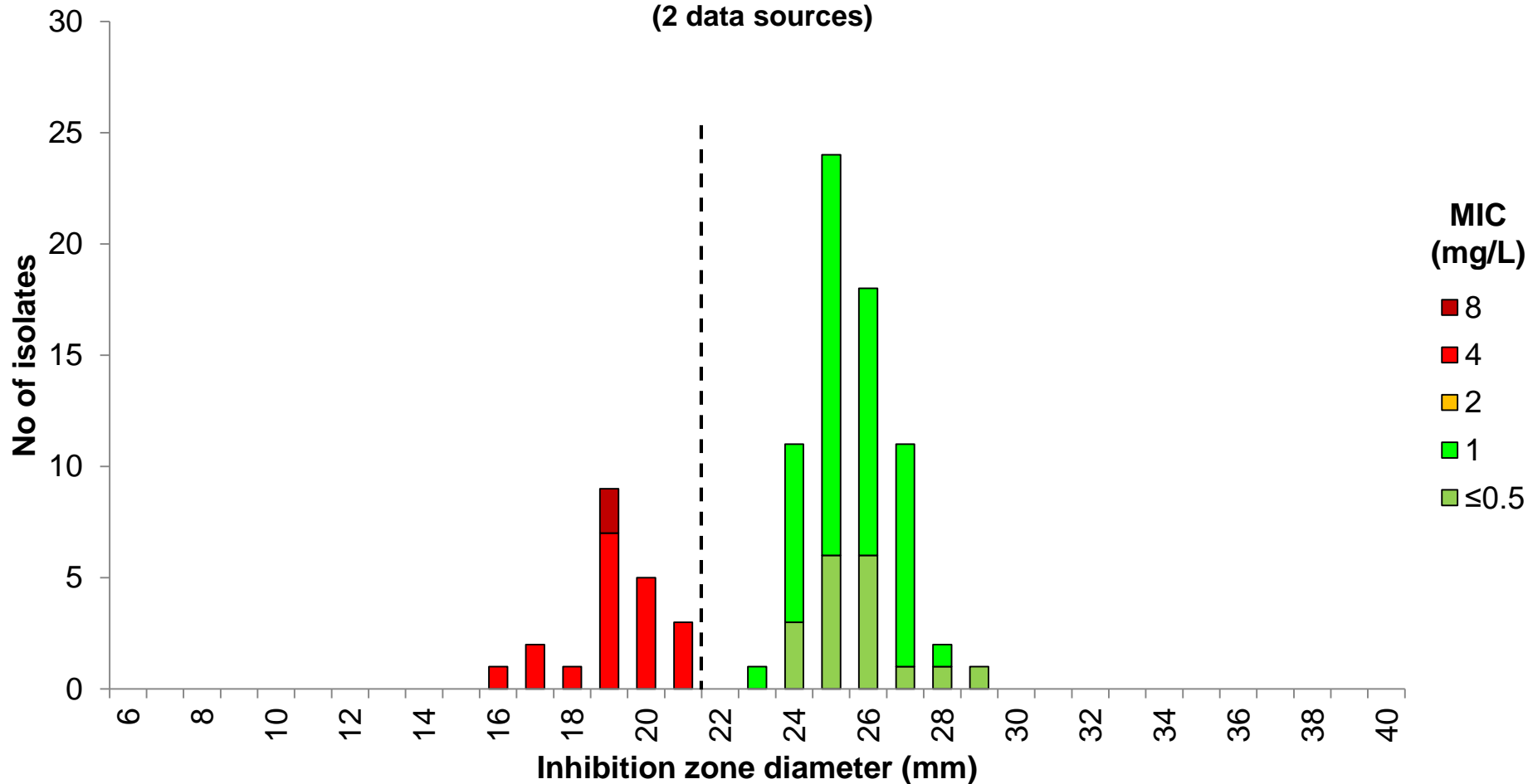
### Breakpoints (other enterococci)

MIC S ≤ 4, R > 4 mg/L

Zone diameter S ≥ 15, R < 15 mm

# Quinupristin-dalfopristin 15 µg vs. MIC *E. faecium*, 39 isolates (89 correlates)

(2 data sources)



## Breakpoints (*E. faecium*)

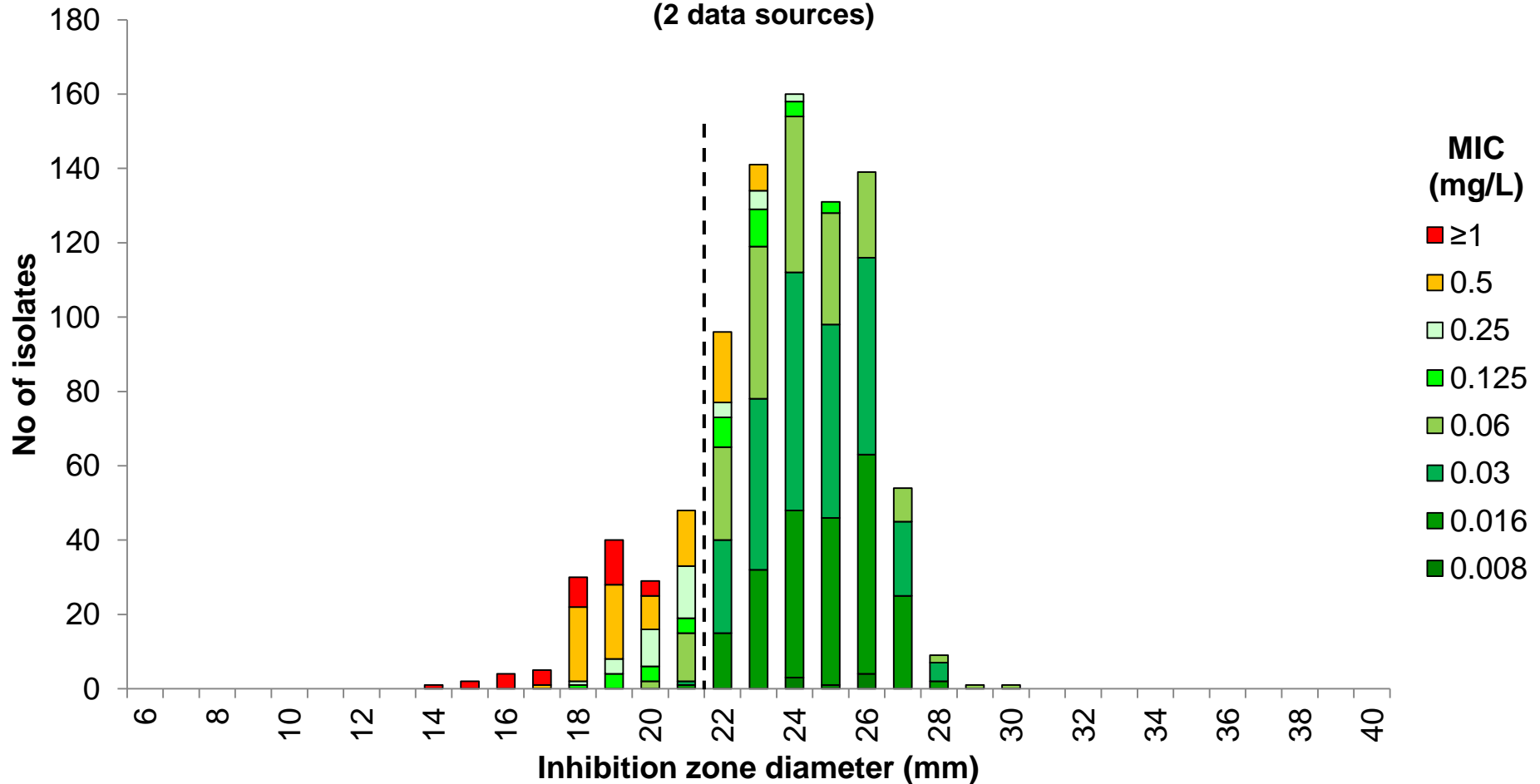
MIC  $S \leq 1$ ,  $R > 1$  mg/L

Zone diameter  $S \geq 22$ ,  $R < 22$  mm

# Eravacycline 20 µg vs. MIC

## *Enterococcus* spp., 127 isolates (891 correlates)

(2 data sources)

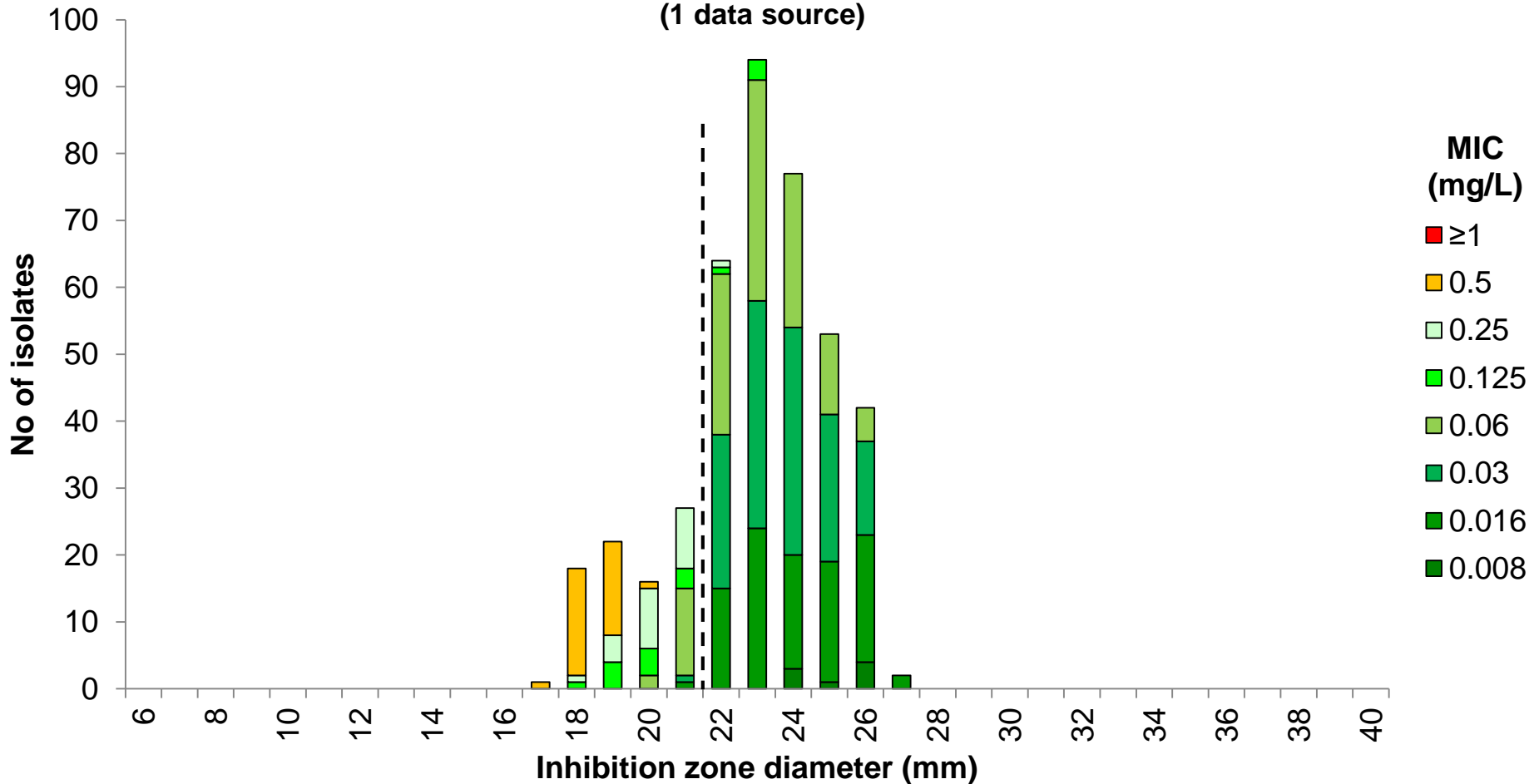


Breakpoints	
MIC	S ≤ 0.25, R > 0.25 mg/L
Zone diameter	S ≥ 22, R < 22 mm

# Eravacycline 20 µg vs. MIC

## *E. faecalis*, 52 isolates (416 correlates)

(1 data source)



### Breakpoints

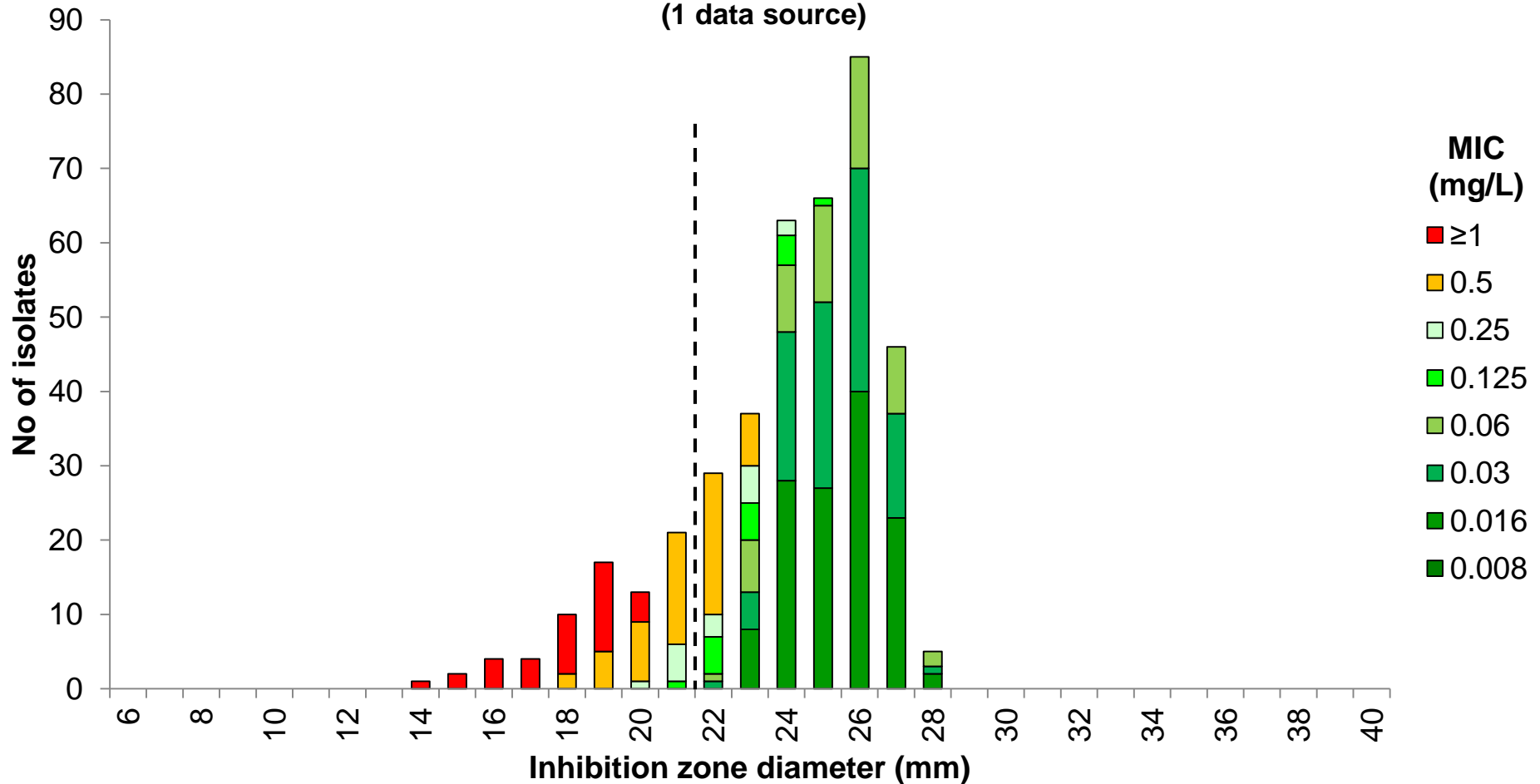
MIC  $S \leq 0.25$ ,  $R > 0.25$  mg/L

Zone diameter  $S \geq 22$ ,  $R < 22$  mm

# Eravacycline 20 µg vs. MIC

## *E. faecium*, 51 isolates (403 correlates)

(1 data source)



### Breakpoints

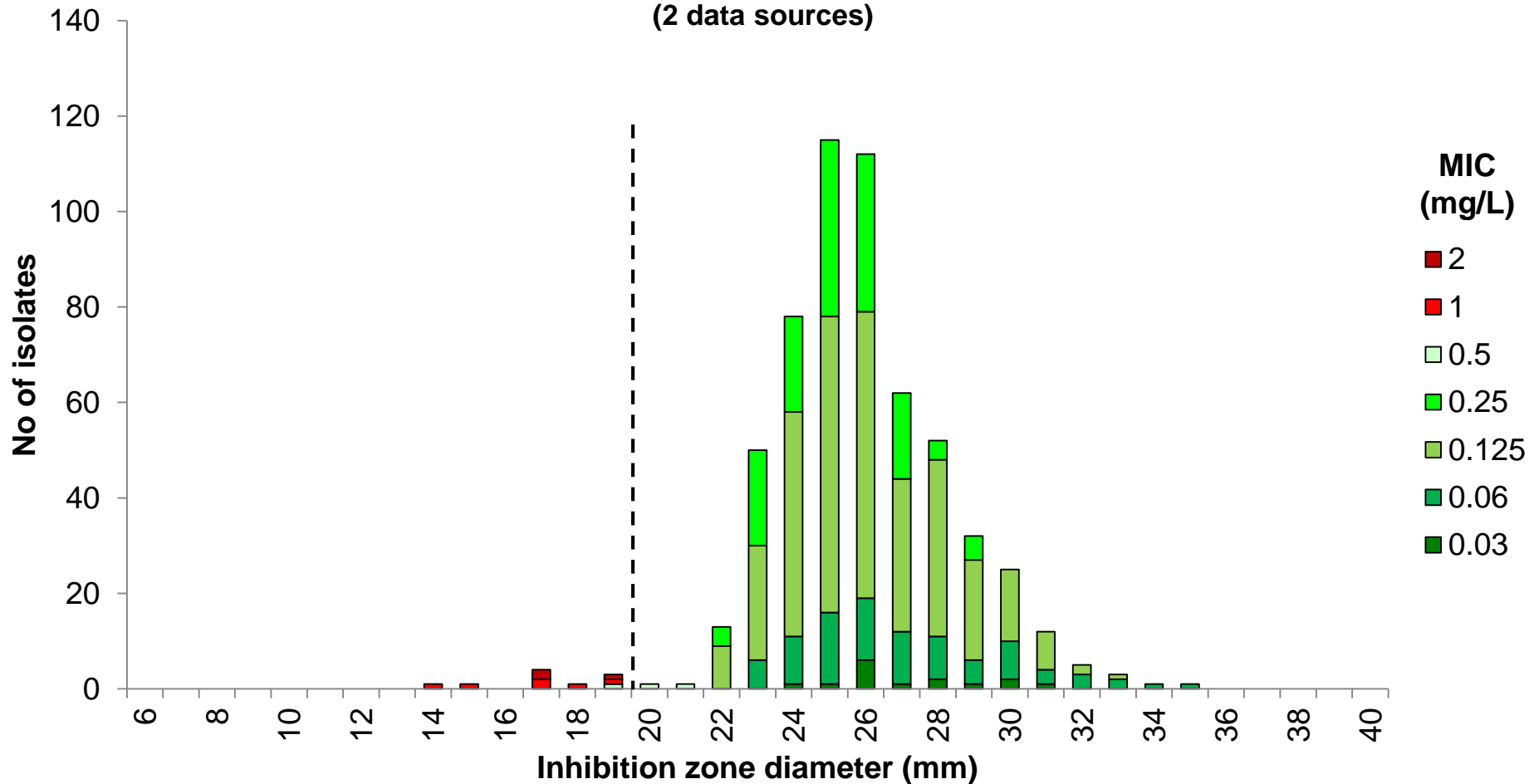
MIC S ≤ 0.25, R > 0.25 mg/L

Zone diameter S ≥ 22, R < 22 mm

# Tigecycline 15 µg vs. MIC

## *Enterococcus* spp., 183 isolates (573 correlates)

(2 data sources)



### Breakpoints

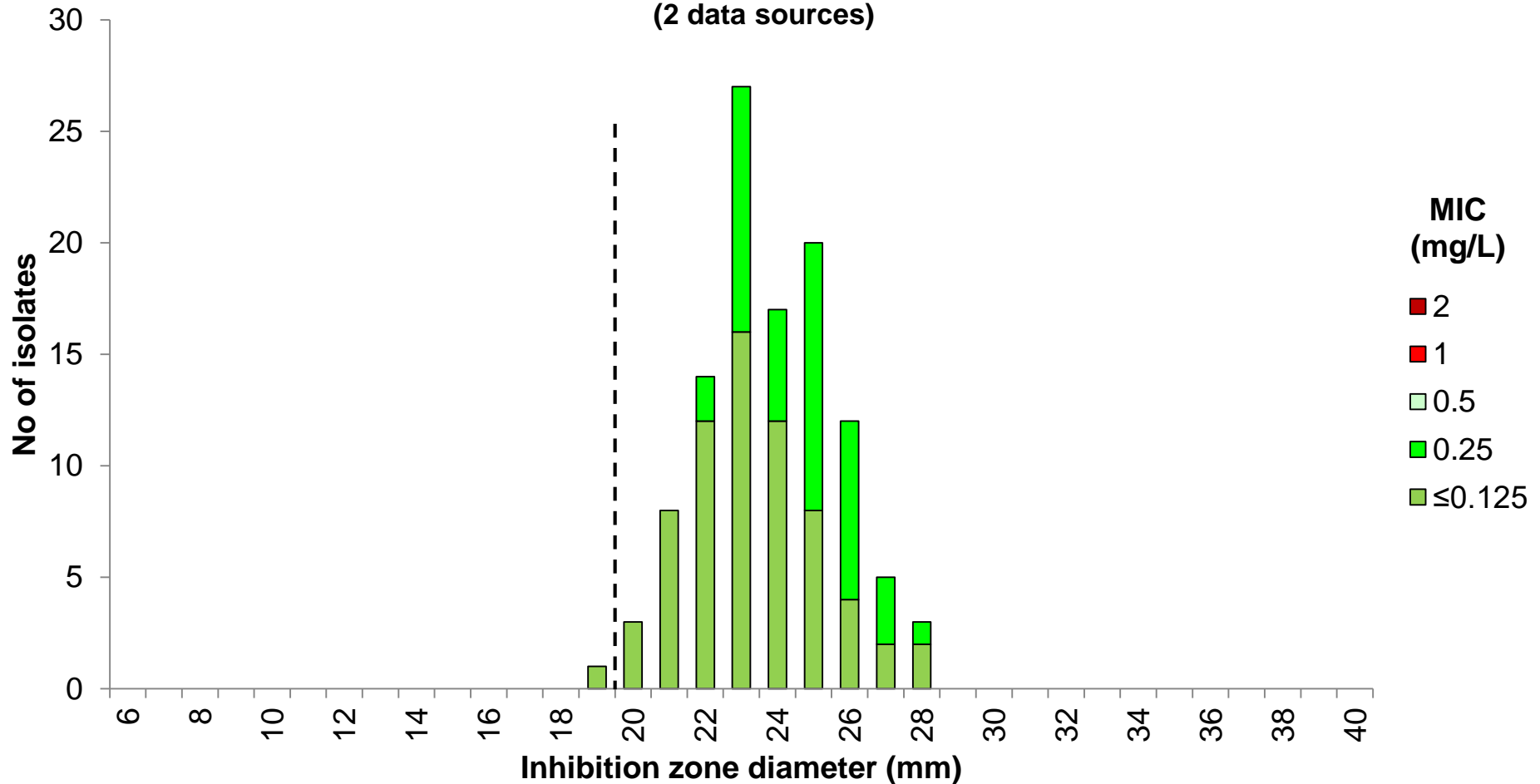
MIC  $S \leq 0.5$ ,  $R > 0.5$  mg/L

Zone diameter  $S \geq 20$ ,  $R < 20$  mm

# Tigecycline 15 µg vs. MIC

## *E. faecalis*, 44 isolates (110 correlates)

(2 data sources)



### Breakpoints

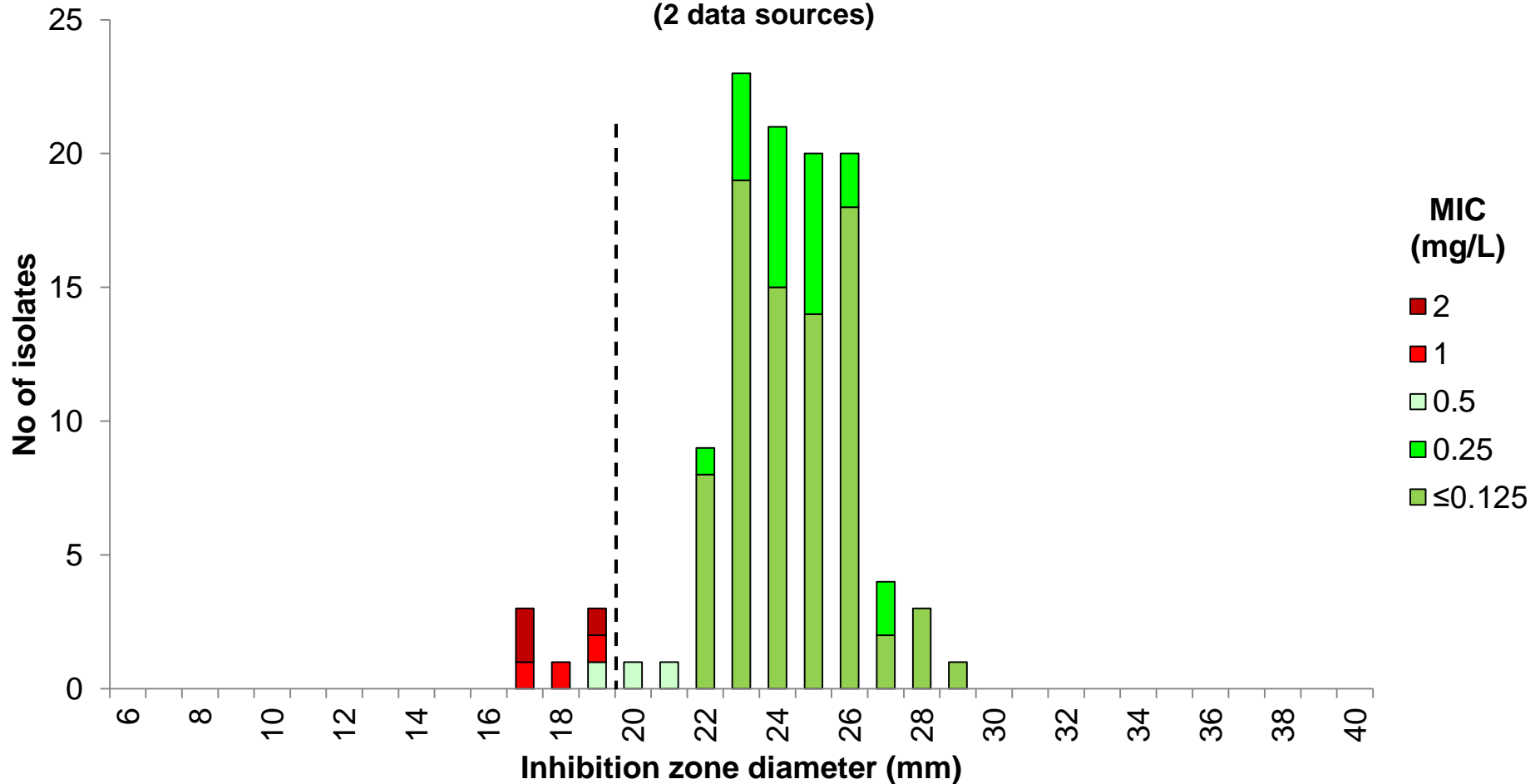
MIC S ≤ 0.5, R > 0.5 mg/L

Zone diameter S ≥ 20, R < 20 mm

# Tigecycline 15 µg vs. MIC

## *E. faecium*, 45 isolates (110 correlates)

(2 data sources)



### Breakpoints

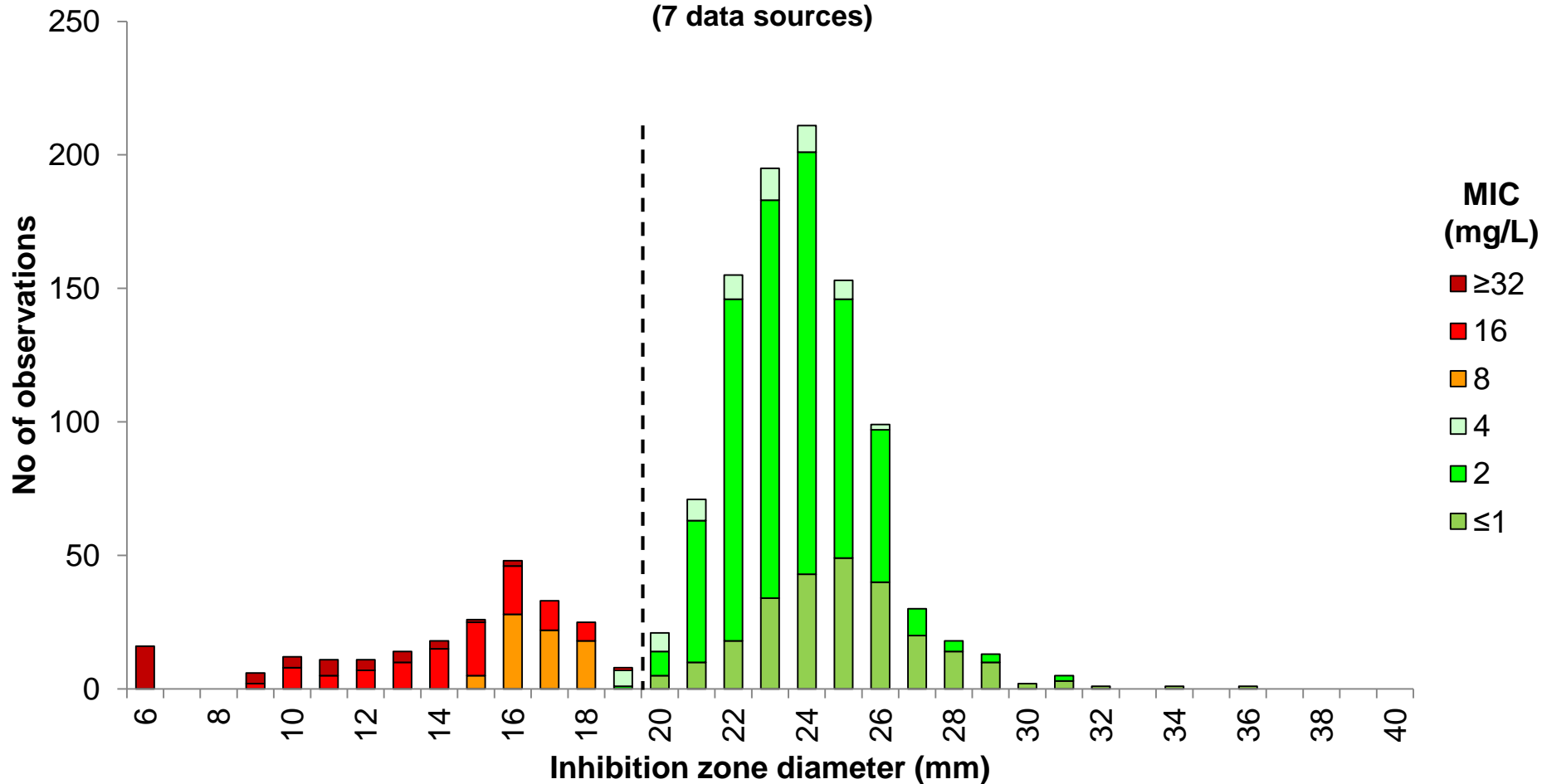
MIC S ≤ 0.5, R > 0.5 mg/L

Zone diameter S ≥ 20, R < 20 mm

# Linezolid 10 µg vs. MIC

## *Enterococcus* spp., 462 isolates (1204 correlates)

(7 data sources)



### Breakpoints

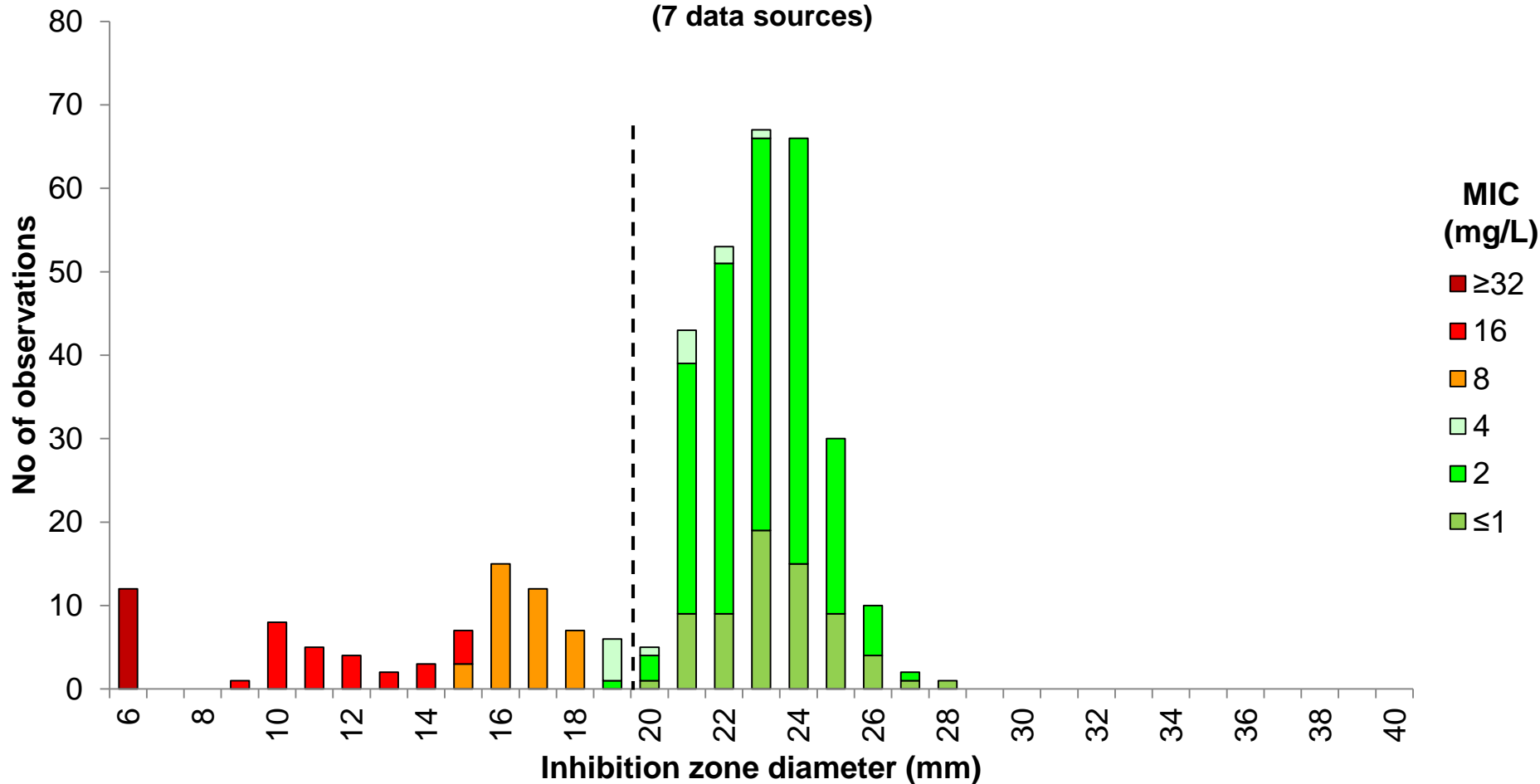
MIC S ≤ 4, R > 4 mg/L

Zone diameter S ≥ 20, R < 20 mm

# Linezolid 10 µg vs. MIC

## *E. faecalis*, 147 isolates (359 correlates)

(7 data sources)



### Breakpoints

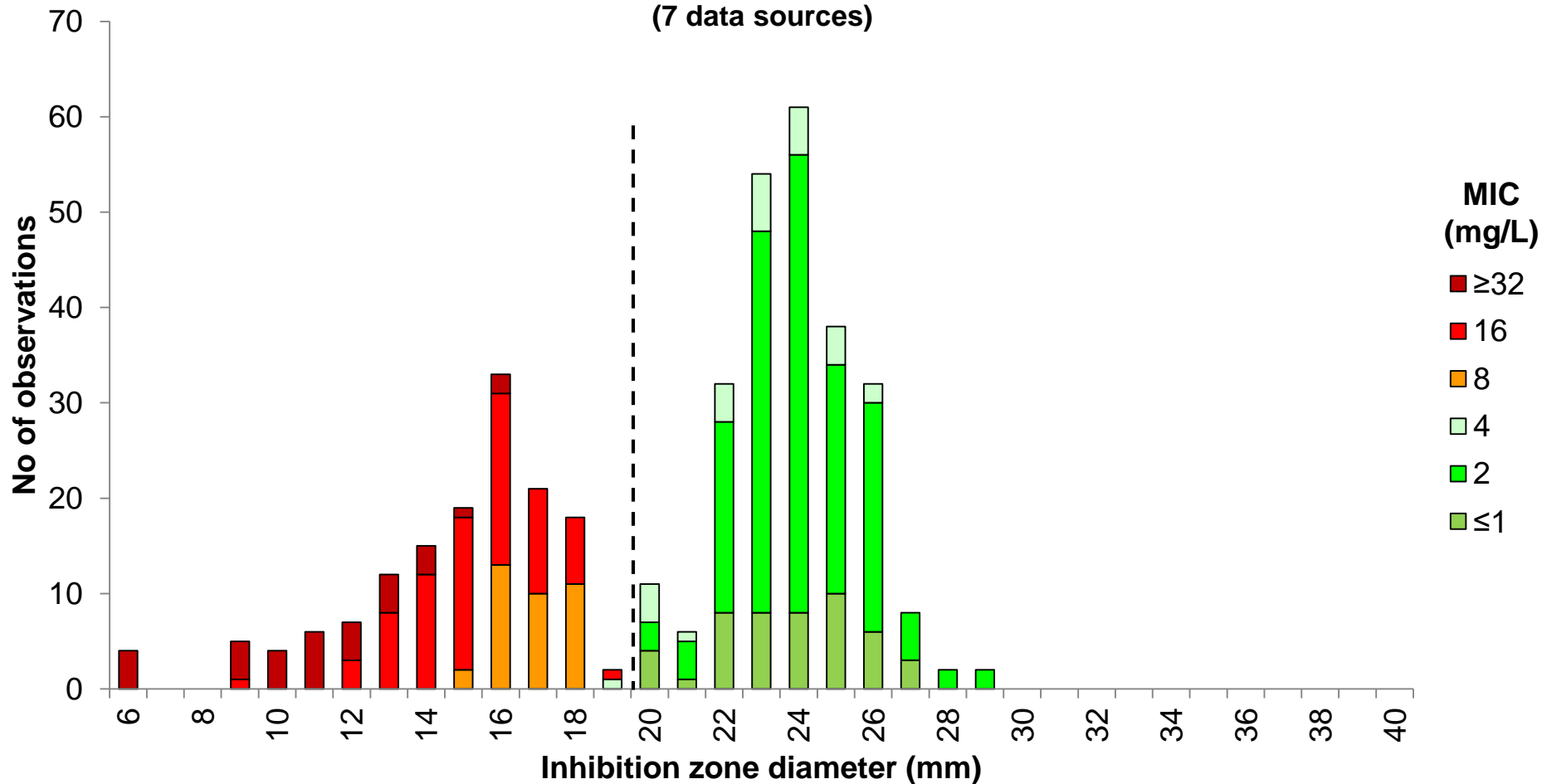
MIC S ≤ 4, R > 4 mg/L

Zone diameter S ≥ 20, R < 20 mm

# Linezolid 10 µg vs. MIC

## *E. faecium*, 148 isolates (392 correlates)

(7 data sources)



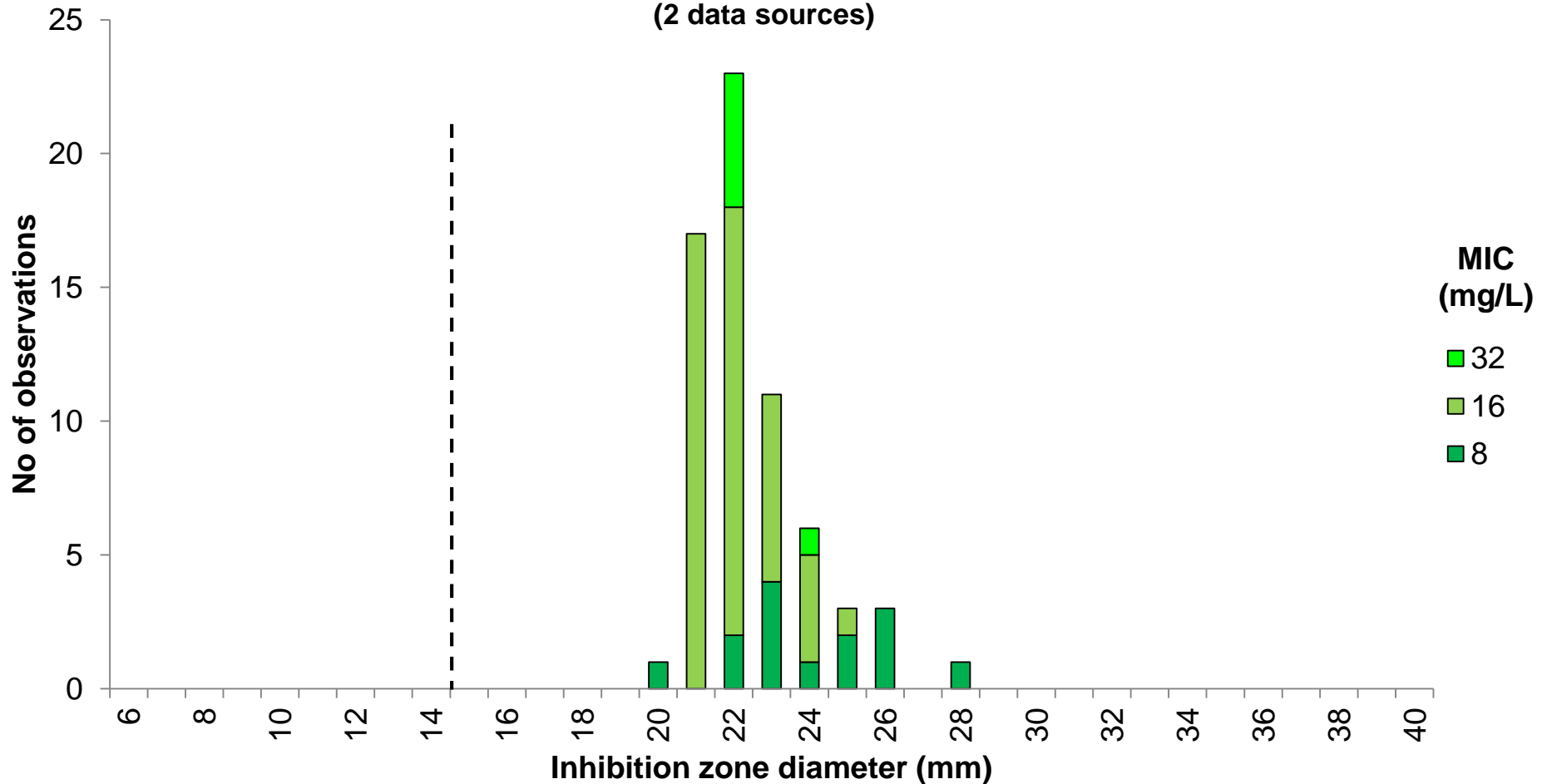
### Breakpoints

MIC  $S \leq 4$ ,  $R > 4$  mg/L

Zone diameter  $S \geq 20$ ,  $R < 20$  mm

# Nitrofurantoin 100 µg vs. MIC *E. faecalis*, 25 isolates (65 correlates)

(2 data sources)



## Breakpoints (*E. faecalis*, uncomplicated UTI)

MIC S ≤ 64, R > 64 mg/L

Zone diameter S ≥ 15, R < 15 mm



**EUCAST**

European Committee  
on Antimicrobial  
Susceptibility Testing