“De animales a humanos, enfermedades transmisibles y One Health”

Resistencias en patógenos de transmisión alimentaria

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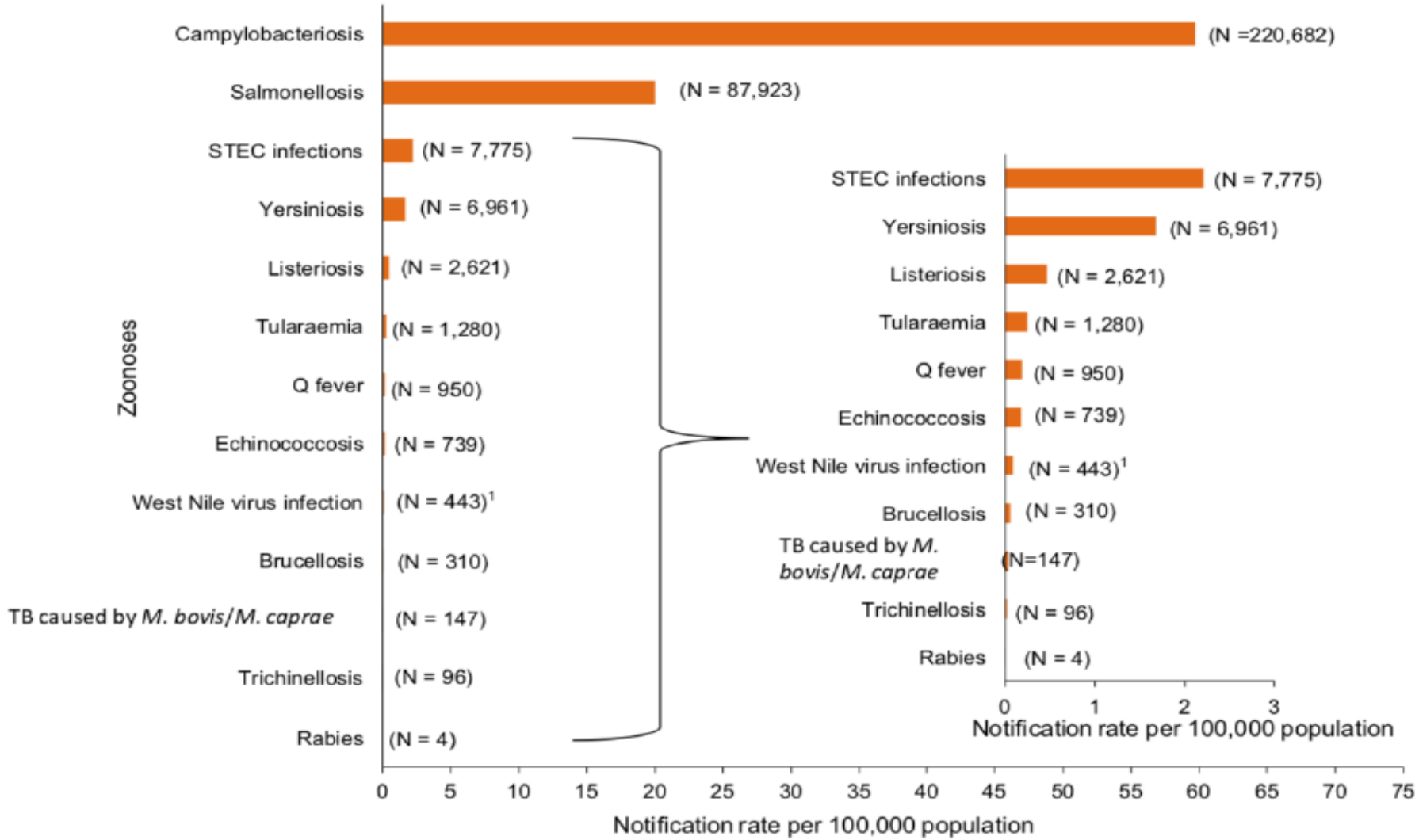
Servicio de Microbiología
Hospital Universitario Donostia.

OMS

Consumo de alimentos contaminados

Gastroenteritis

Zoonosis


Campylobacteriosis
(N =220,682)
Salmonellosis
(N = 87,923)
STEC infections
(N = 7,775)
Yersiniosis
(N = 6,961)
Listeriosis
(N = 2,621)
Tularaemia
(N = 1,280)
Q fever
(N = 950)
Echinococcosis
(N = 739)
West Nile virus infection
(N = 443)[1]
Brucellosis
(N = 310)
TB caused by M. bovis/M. caprae
(N = 147)
Trichinellosis
(N = 96)
Rabies
(N = 4)
Zoonoses
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75
Notification rate per 100,000 population
STEC infections
(N = 7,775)
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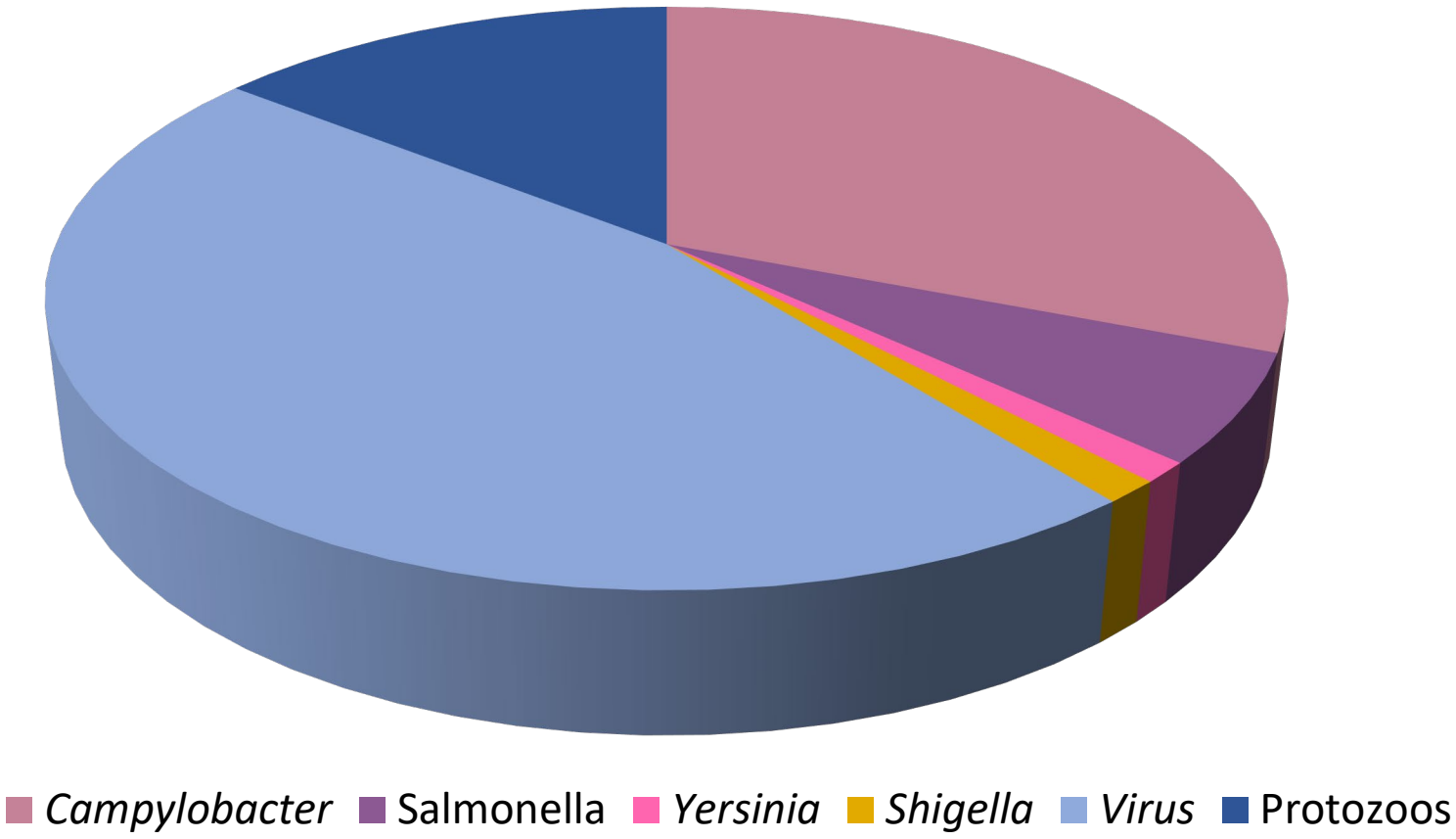
(N = 96)
Rabies
(N = 4)
0 1 2 3
Notification rate per 100,000 population

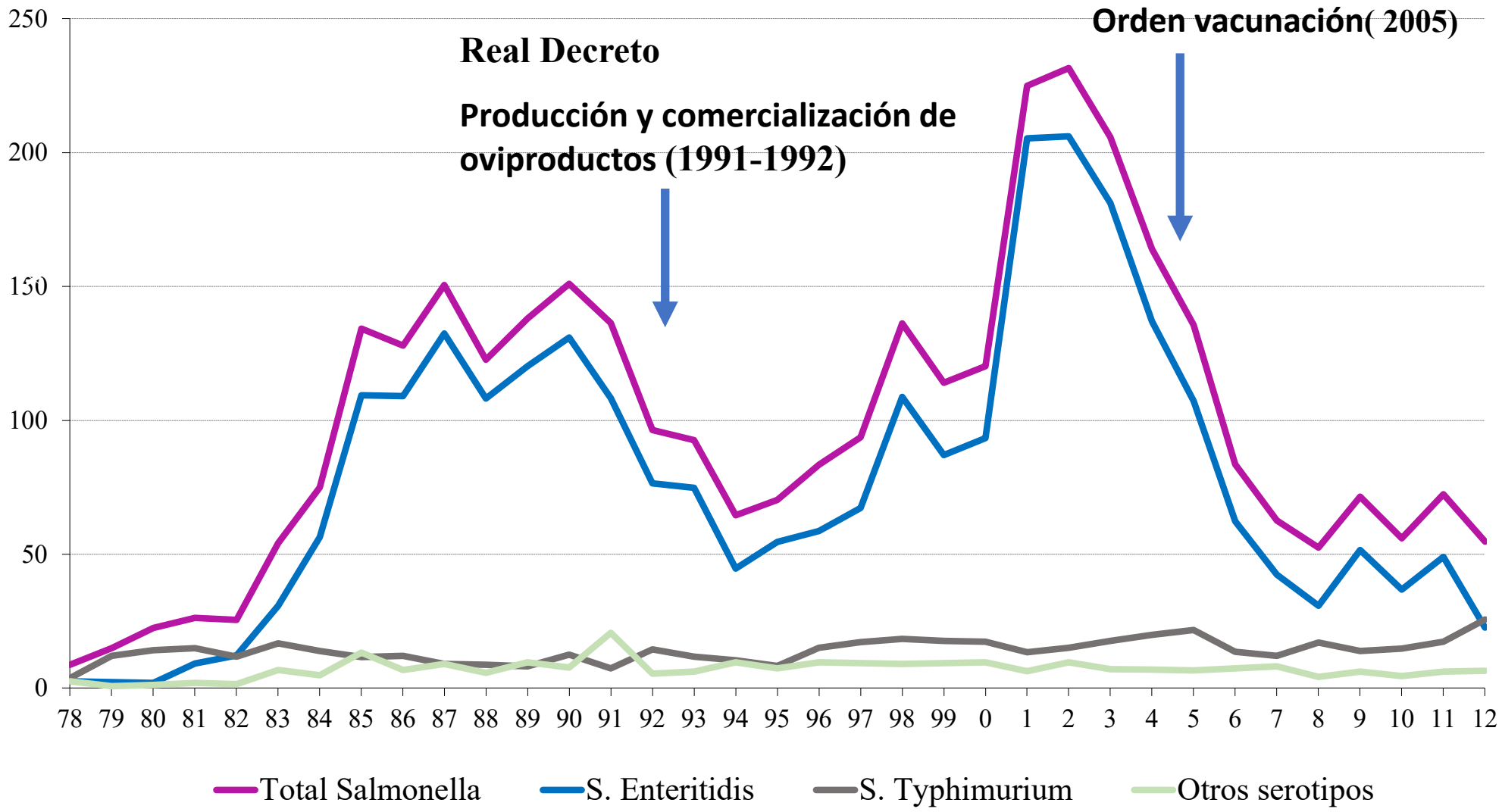
The European Union One Health 2019 Zoonoses Report

- ✓ Zoonosis mas prevalente fue campylobacteriosis
- ✓ Representó el 50 % de todas las zoonosis
- ✓ Segundo Salmonella

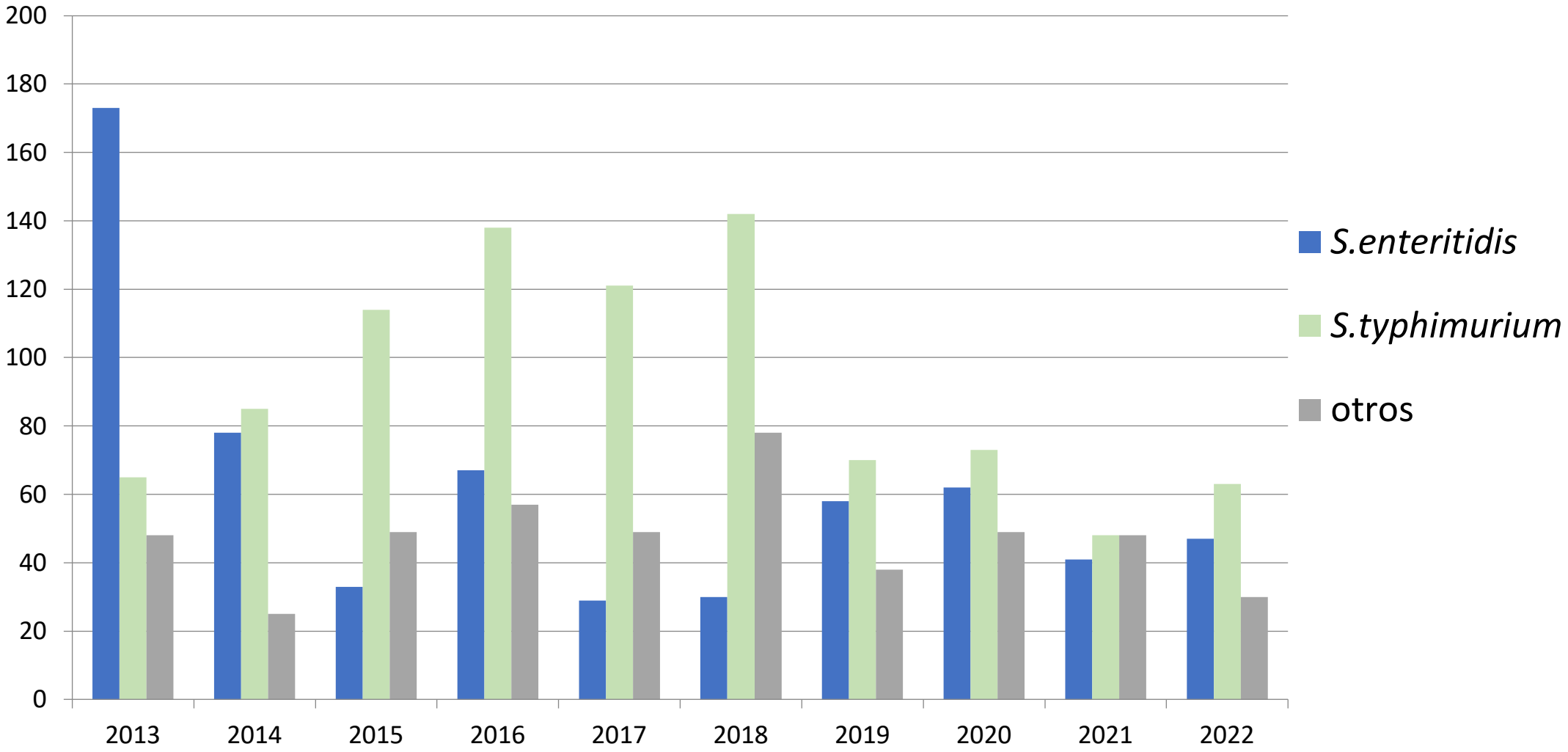
Patógenos gastrointestinales en Gipuzkoa 2019



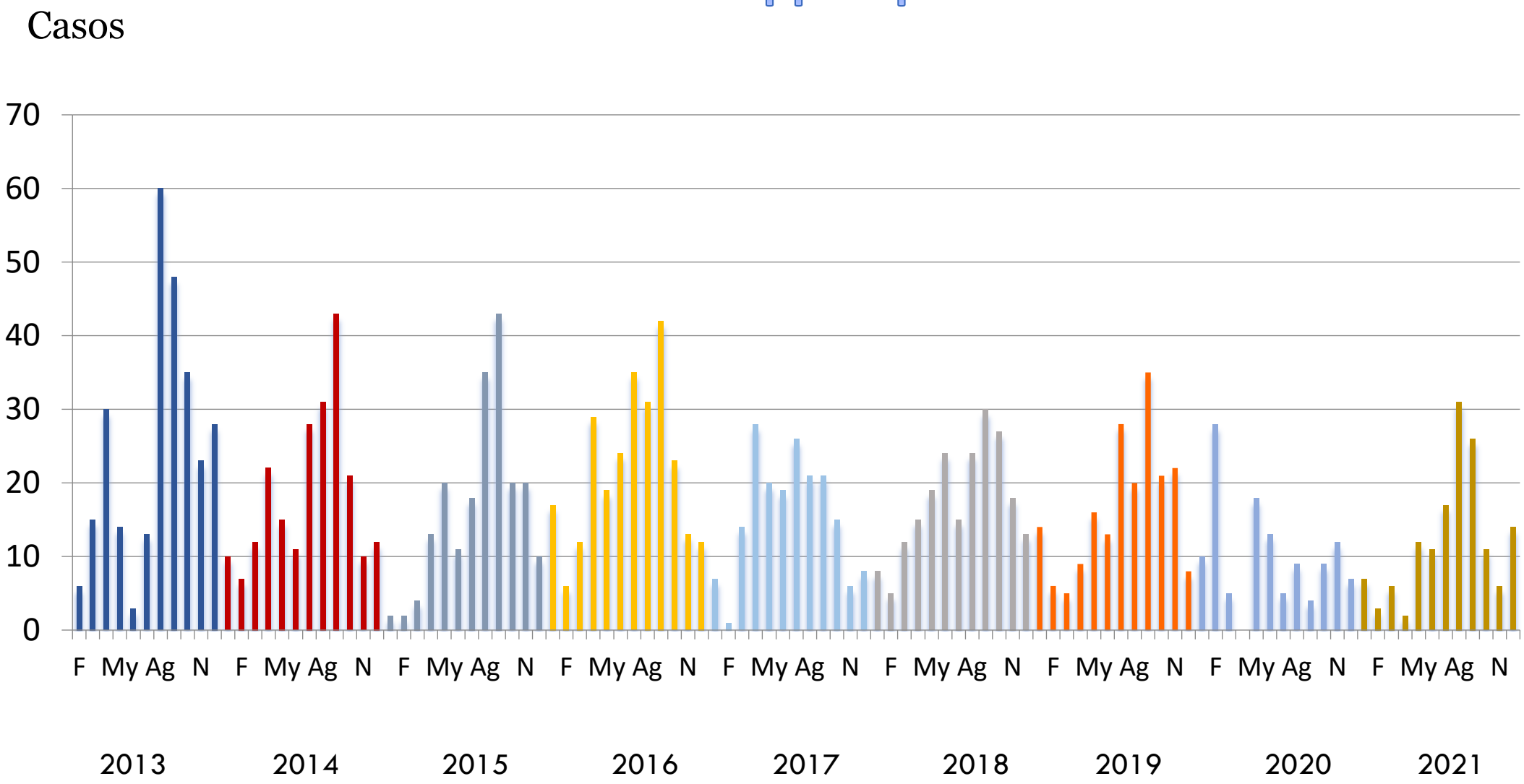
Tasa de incidencia de GEA por *Salmonella* no-Typhi
Distribución por serotipos



Serotipos *Salmonella* spp

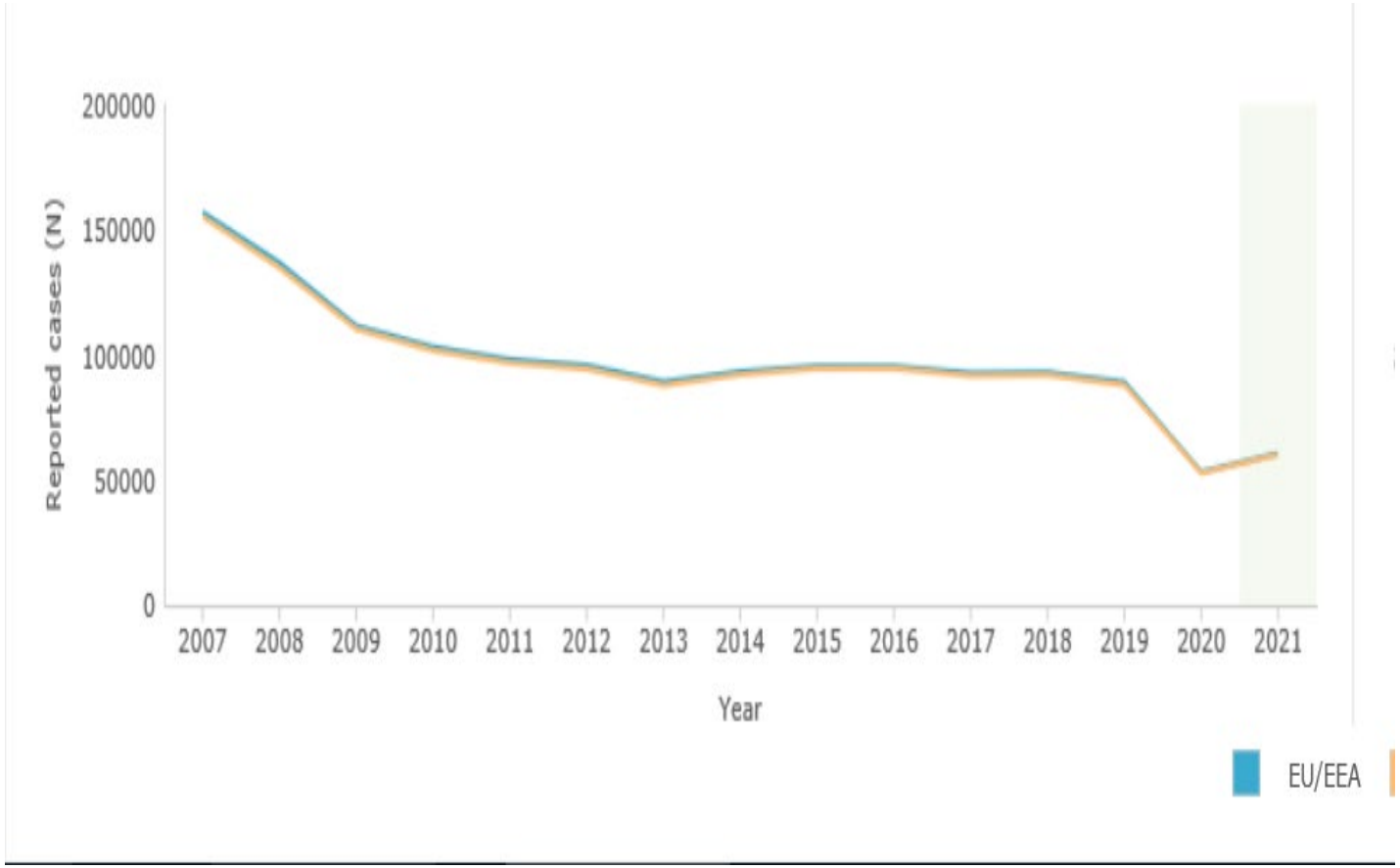


Salmonella spp. Gipuzkoa

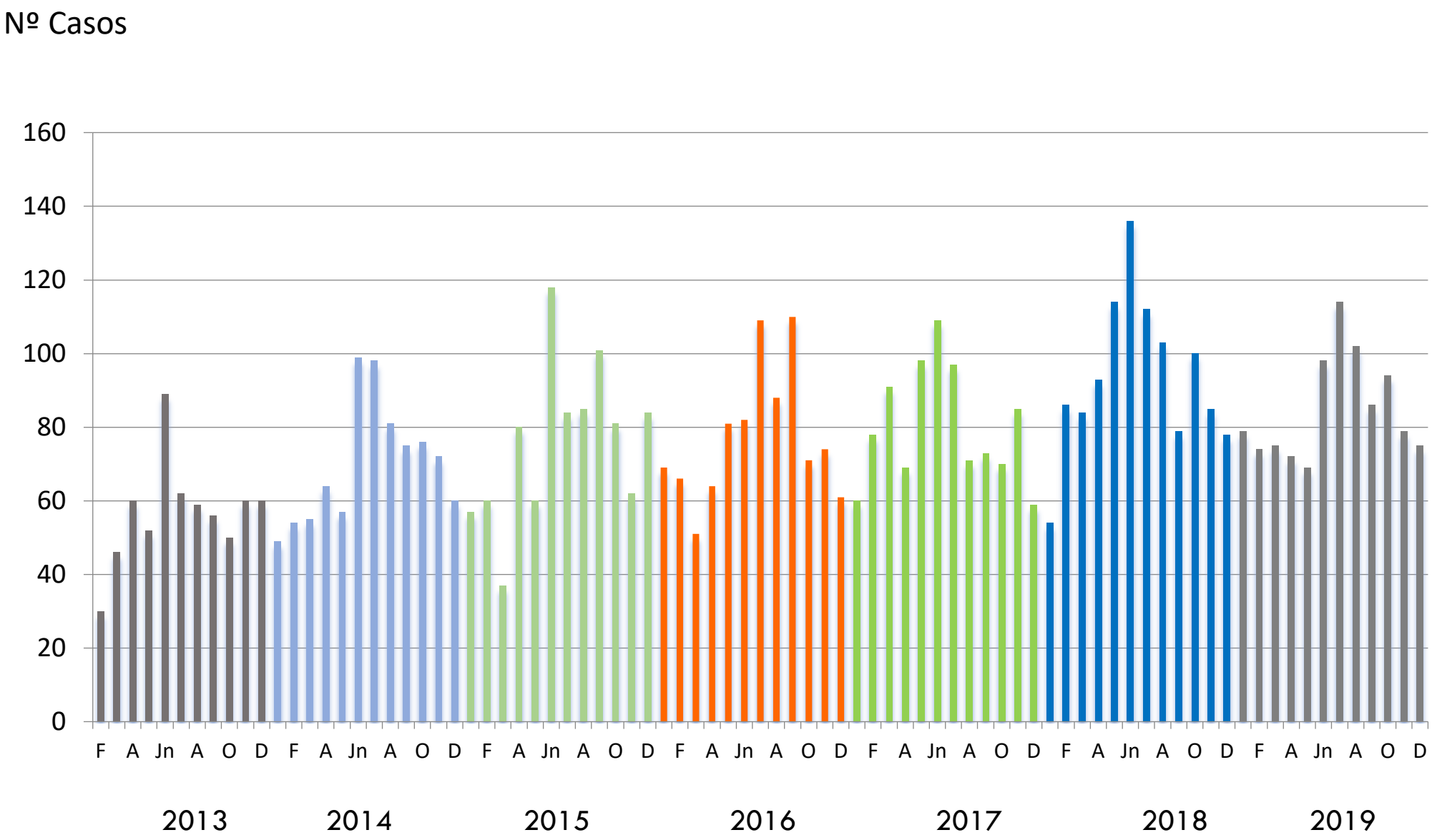


Surveillance Atlas of Infectious Diseases

Salmonellosis | Confirmed cases | Reported cases | 2021

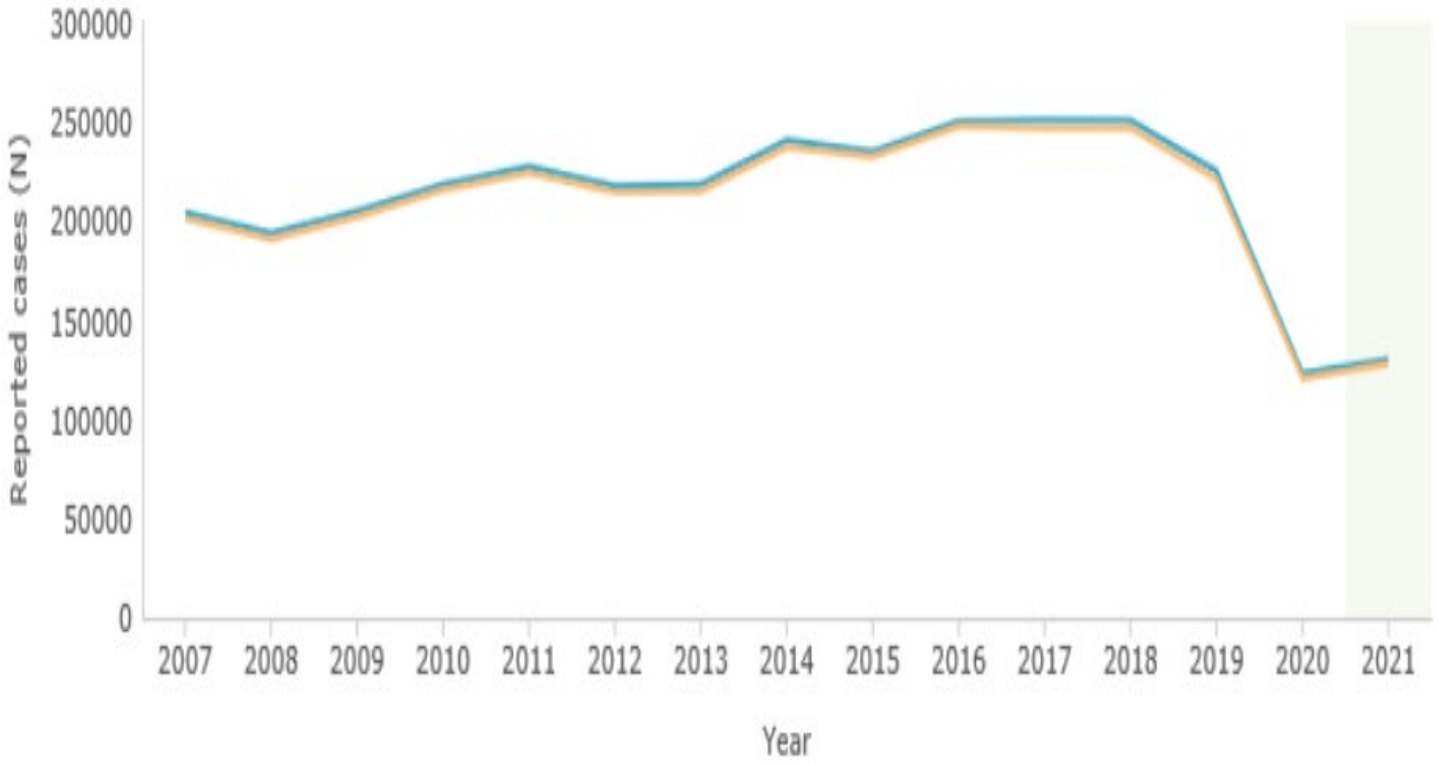


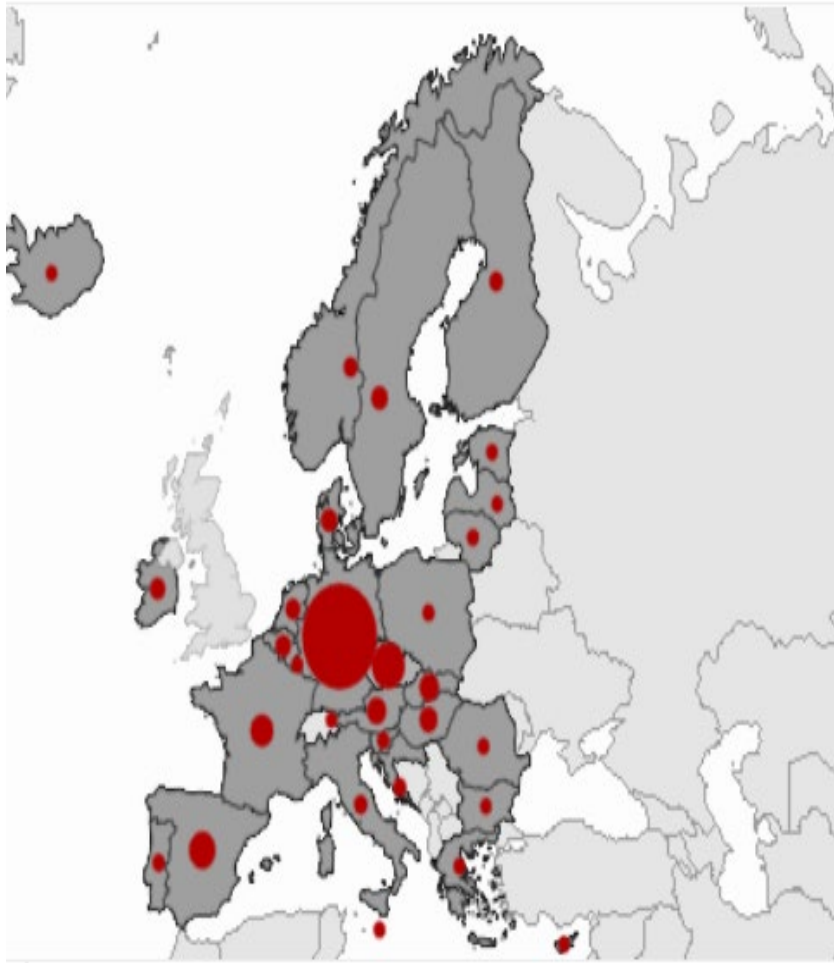
Campylobacter spp. Gipuzkoa



Surveillance Atlas of Infectious Diseases

Campylobacteriosis | Confirmed cases | Reported cases | 2021





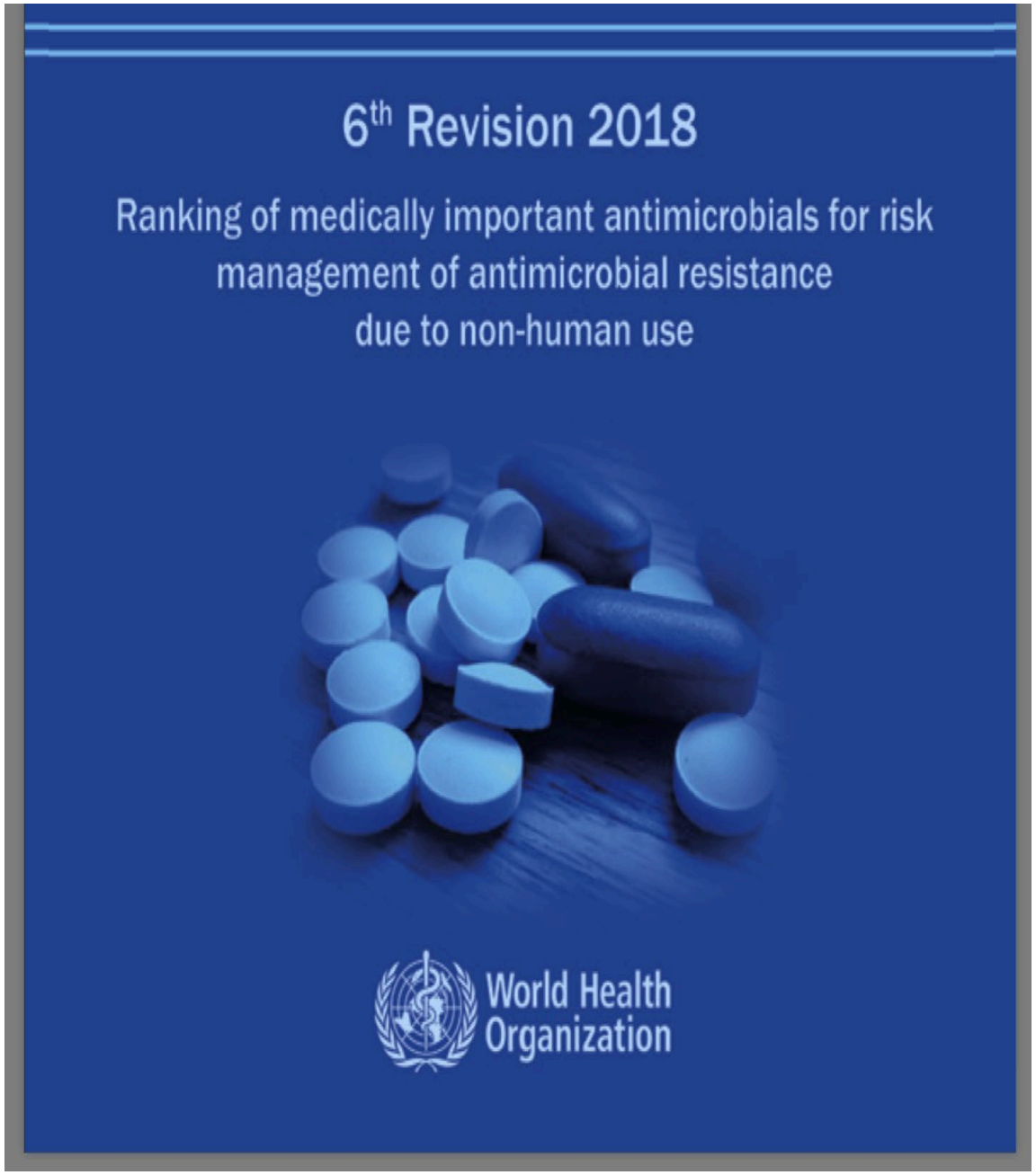
- Procesos autolimitados y no requieren tratamiento
- Cuadros clínicos severos, requieren administración de antibiótico

  Edades extremas

  Pacientes inmunodeprimidos

  Pacientes especialmente vulnerables

La **Organización Mundial de la Salud** (OMS) ha alertado desde hace años del uso inapropiado de los antimicrobianos en las granjas animales esta generando resistencias entre estos microorganismos convirtiéndose en un importante problema de Salud Pública

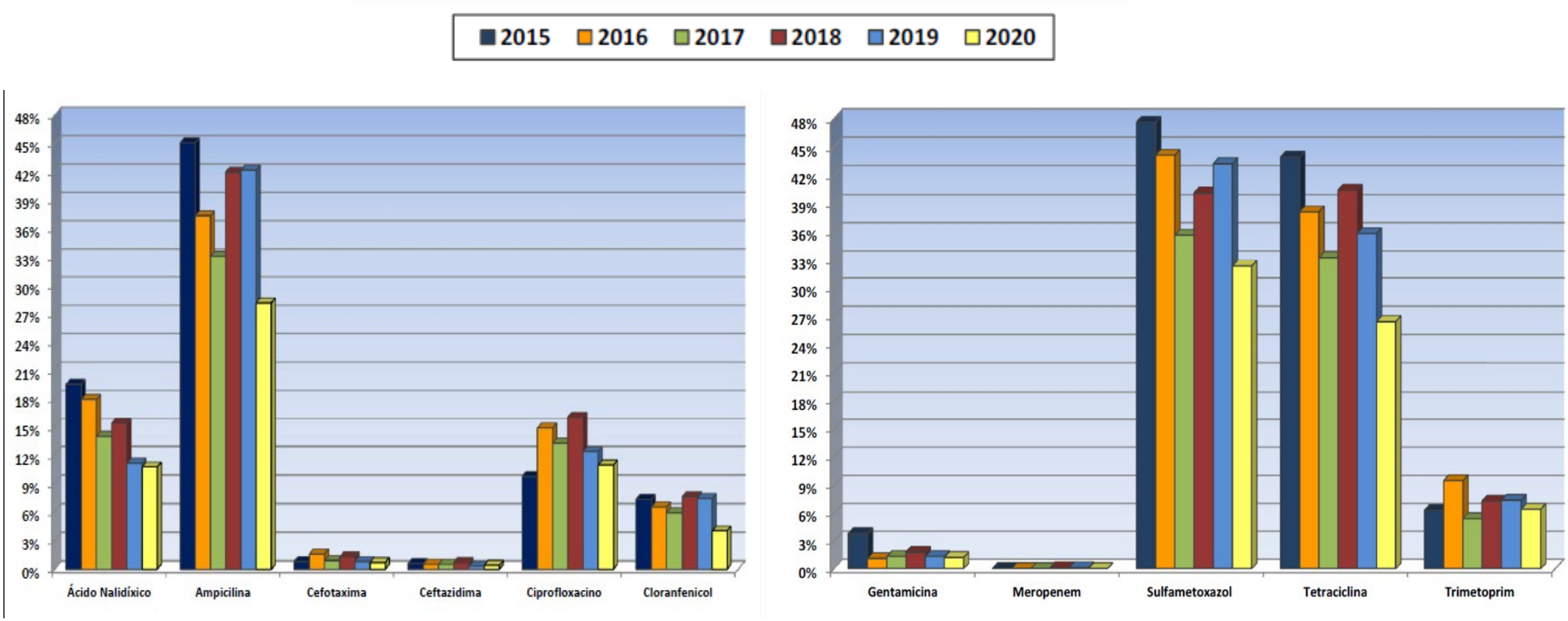


”Critically important antimicrobials”

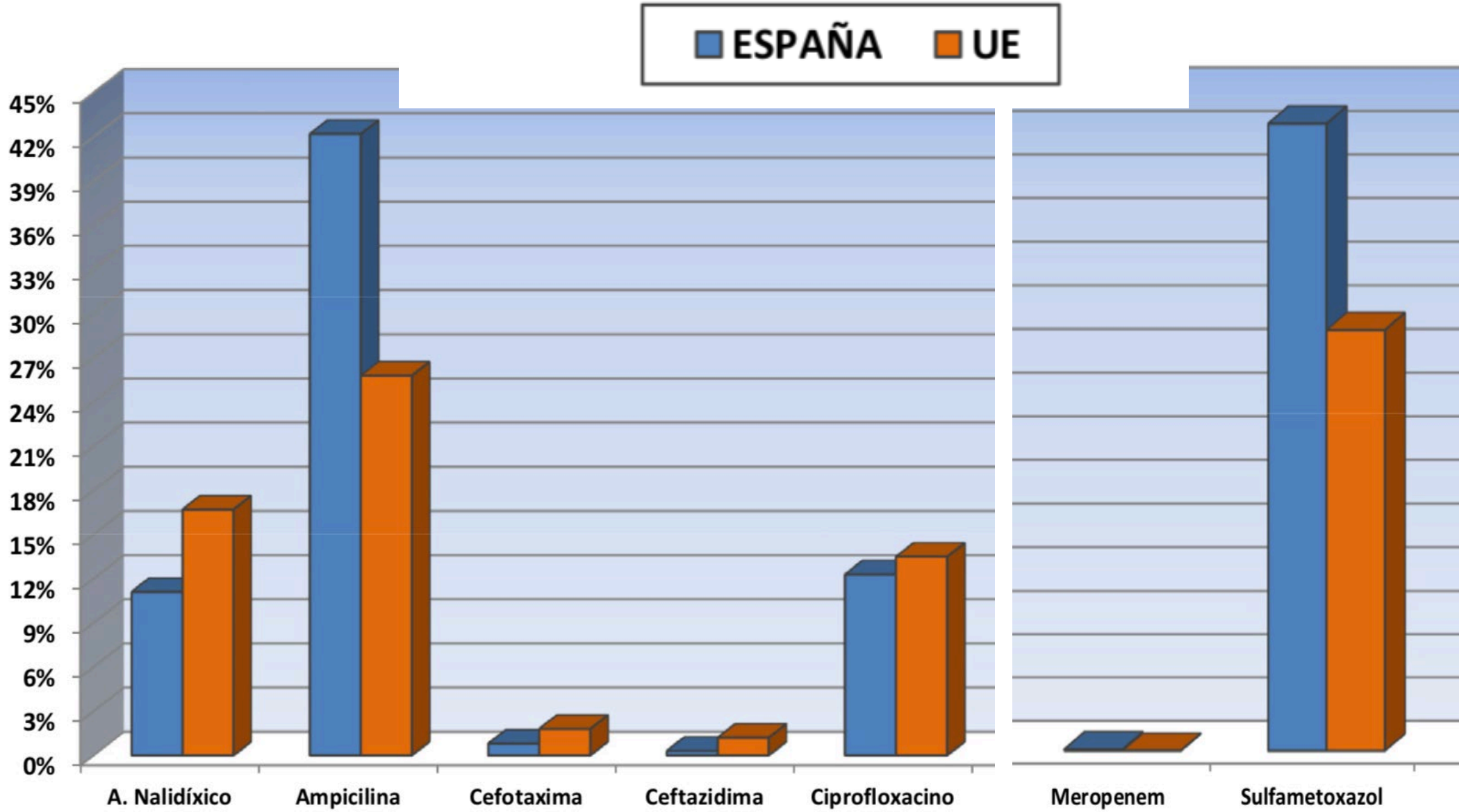
- Quinolonas
- Cefalosporinas 3ª generación
- Macrólidos

Salmonella spp

Resistencias de *Salmonella* spp en personas. España



Porcentaje de aislados de *Salmonella* spp en personas, microbiológicamente resistentes a cada antibiótico, en España, en el periodo 2015-2020.
Fuente: Informe de la resistencia antimicrobiana en bacterias zoonósicas e indicadoras de personas, animales y alimentos de la Autoridad Europea de Seguridad Alimentaria, (EFSA) 2020



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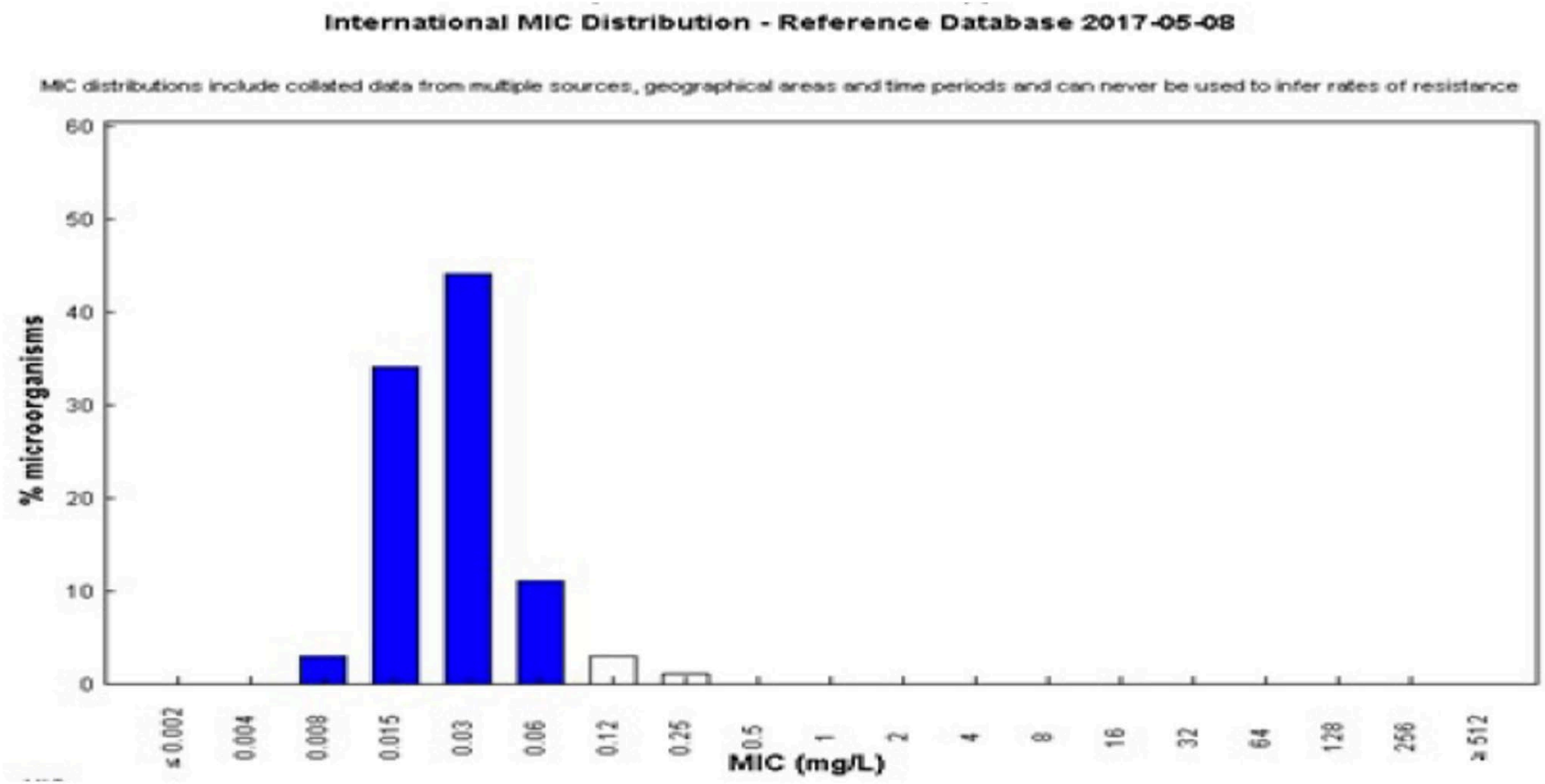
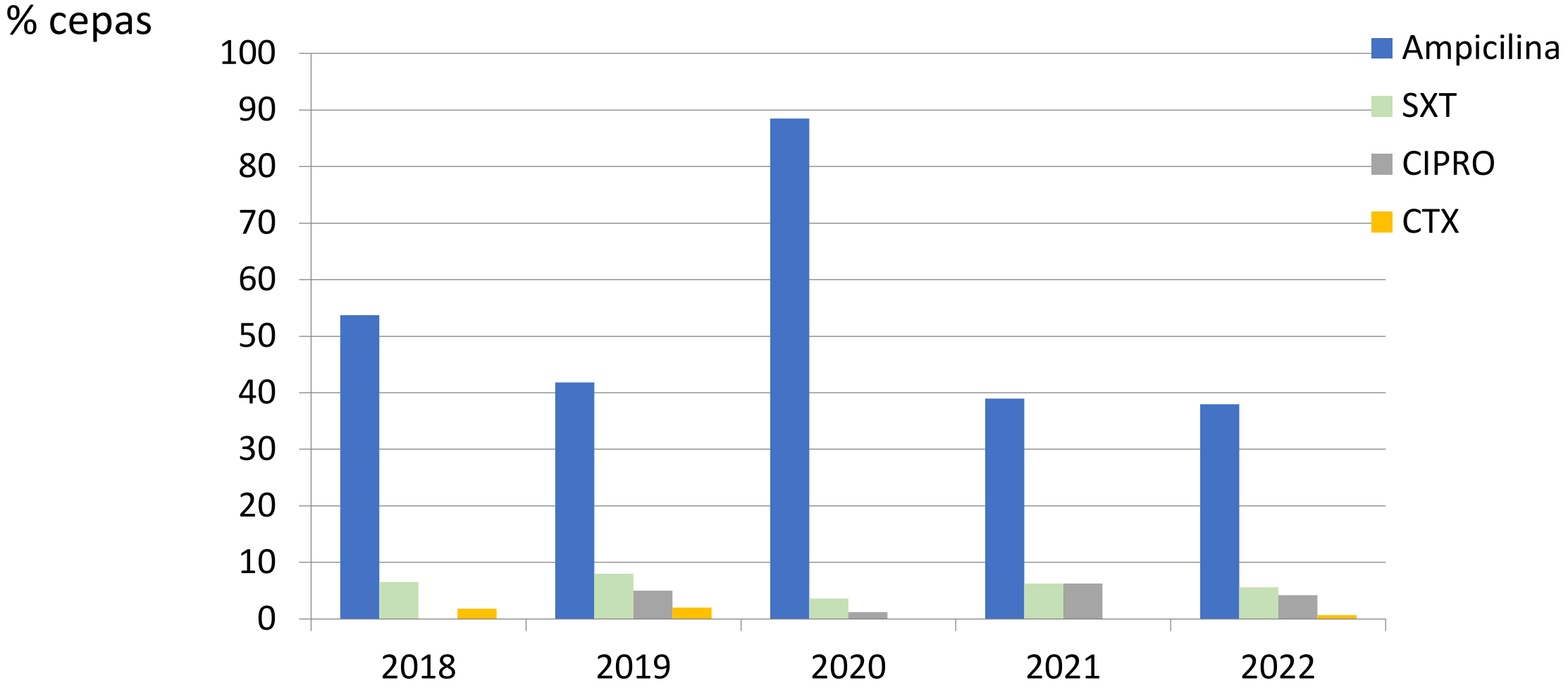
Salmonella y Ciprofloxacino



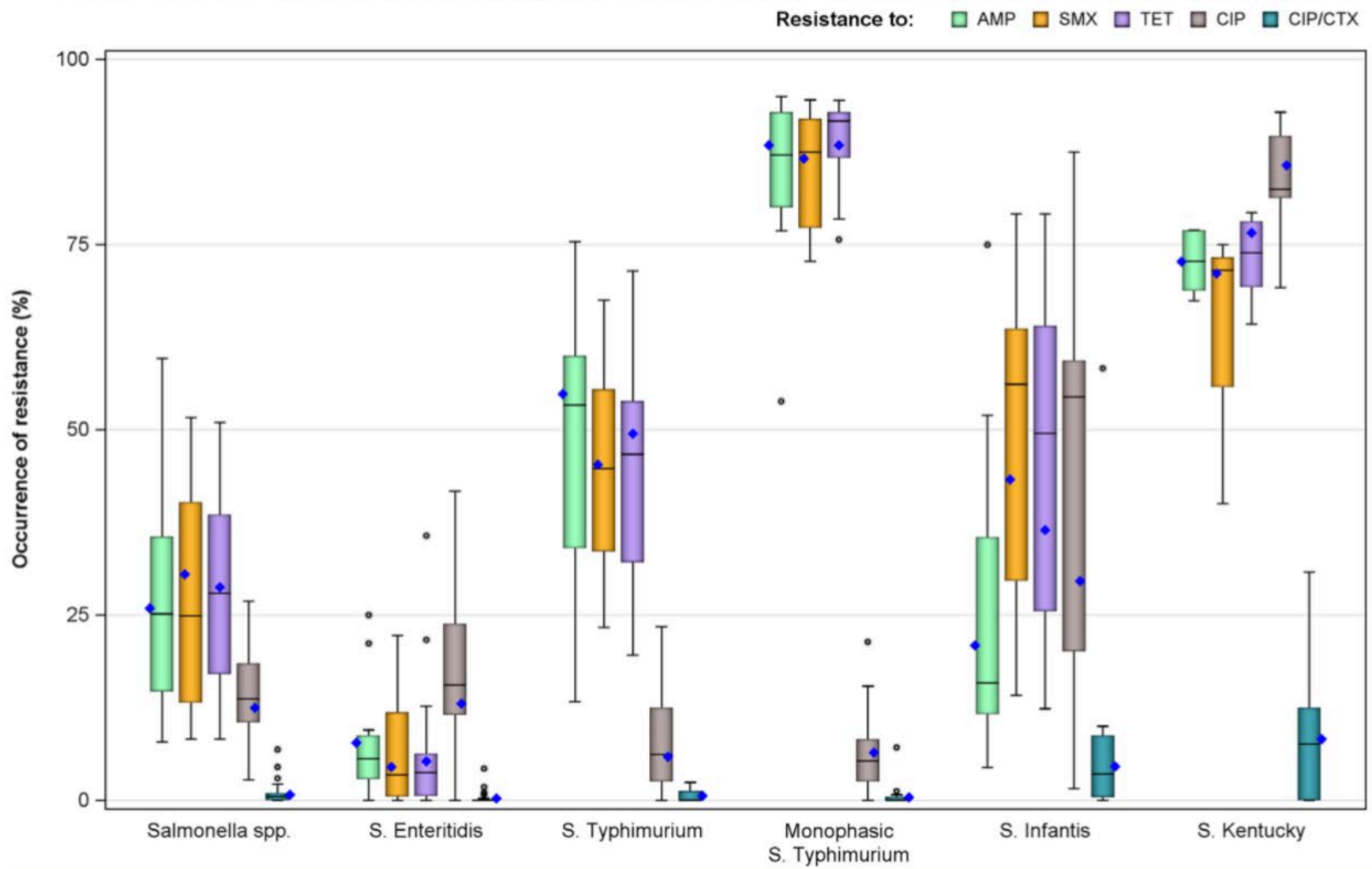
Distribución de las cepas de *Salmonella* spp frente a distintas concentraciones mínimas inhibitorias (MIC) de Ciprofloxacino. En azul, porcentaje de cepas sensibles a Ciprofloxacino según su MIC y en blanco cepas resistentes.

Fuente: European Committee on Antimicrobial Susceptibility Testing. Data from the EUCAST MIC distribution website.

Salmonella spp. Resistencias en Gipuzkoa



Occurrence of resistance to selected antimicrobials in *Salmonella* spp. and selected serovars isolated from humans, 2018



Salmonellas ciprofloxacino resistentes

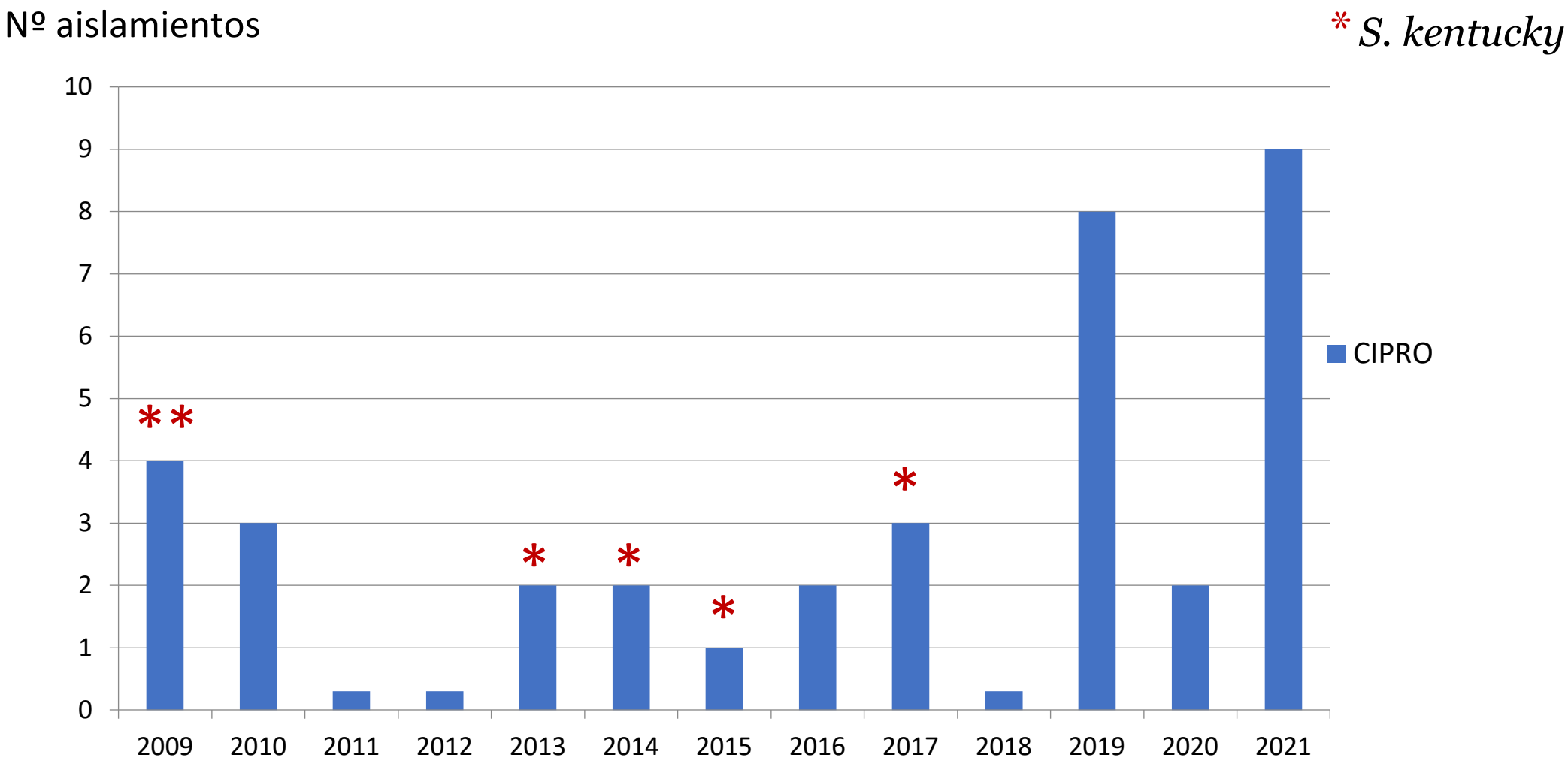


TABLE 1 | Origin and resistance properties of *Salmonella enterica* serovar Kentucky ST198 isolates from Spanish hospitals.

Isolate[a]	Travel history[b]	Resistance phenotype[c]	SGI1-K (SGI1-P) genes Other genes	CIP MIC (μg/mL)	Amino acid substitutions		Plasmid Inc (size in bp)[d]
					GyrA	ParC	
LSP 213/09	na	CHL, TET, NAL, CIP	***tet*(A)**, *catA1*, *aac(6')-Iaa*	8	Ser83Phe Asp87Gly	Thr57Ser Ser80Ile	ColpVC (4,110)
LSP 150/10	Morocco	AMP, GEN, STR, SUL, TET, NAL, CIP	***bla*$_{TEM-1B}$**, ***aacA5*, *aadA7*, *sul1*, *tet*(A)**, aac(6')-Iaa	12	Ser83Phe Asp87Asn	Thr57Ser Ser80Ile	ColE (5,058); Col156 (5,769); nid (10,524)
LSP 105/15	na	AMP, NAL, CIP	***bla*$_{TEM-1B}$**, *aac(6')-Iaa*	16	Ser83Phe Asp87Asn	Thr57Ser Ser80Ile	nd
LSP 235/17	na	TET, NAL, CIP	***tet*(A)**, *aac(6')-Iaa*	>32	Ser83Phe Asp87Asn	Thr57Ser Ser80Ile	nid (3,893; 4,631)
LSP 314/17	Bali	AMP, GEN, STR, SUL, TET, NAL, CIP	***bla*$_{TEM-1B}$**, ***aacA5***, **aadA7**, ***strA*, *strB*, *sul1*, *tet*(A)**, *aac(6')-Iaa*	12	Ser83Phe Asp87Asn	Thr57Ser Ser80Ile	nd
HUD 1/09	Tanzania	GEN, STR, SUL, TET, NAL, CIP	***aacA5*, *aadA7*, *strB*, *sul1*, *tet*(A)**, *aac(6)-Iaa*	6	Ser83Phe Asp87Tyr	Thr57Ser Ser80Ile	nd
HUD 2/09	South Africa	AMP, GEN, STR, SUL, TET, NAL, CIP	***bla*$_{TEM-1B}$**, ***aacA5*, *aadA7*, *strB*, *sul1*, tet(A)**, aac(6)-Iaa	8	Ser83Phe Asp87Tyr	Thr57Ser Ser80Ile	nd
HUD 1/13	nth	AMP, NAL, CIP	***bla*$_{TEM-1B}$**, *aac(6)-Iaa*	8	Ser83Phe Asp87Asn	Thr57Ser Ser80Ile	nid (1,145)
HUD 1/14	nth	AMP, GEN, STR, SUL, TET, NAL, CIP	***bla*$_{TEM-1B}$**, ***aacA5, aadA7, sul1*, *tet*(A)**, *aac(6)-Iaa*	12	Ser83Phe Asp87Asn	Thr57Ser Ser80Ile	ColE (4,132); nid (3,372; 4,010)
HUD 1/15	nth	AMP, GEN, STR, SUL, TET, NAL, CIP	***bla*$_{TEM-1B}$**, ***aacA5, aadA7, sul1*, *tet*(A)**, *aac(6)-Iaa*	12	Ser83Phe Asp87Asn	Thr57Ser Ser80Ile	ColE (2,504); nid (3,371; 3,904; 4,179)
HUD 1/17	Morocco	TET, NAL, CIP	***tet*(A)**, *aac(6)-Iaa*	8	Ser83Phe Asp87Asn	Thr57Ser Ser80Ile	ColE (2,448); nid (4,110)
HUA 3/18	Morocco	AMP, GEN, STR, SUL, TET, NAL, CIP	***bla*$_{TEM-1B}$**, ***aacA5, aadA7, sul1*, *tet*(A)**, *aac(6)-Iaa*	12	Ser83Phe Asp87Asn	Thr57Ser Ser80Ile	ColE (4,020); nid (2,117; 3,985)
HUA 10/18	nth	SUL, TET, NAL, CIP	***sul1*, *tet*(A)**, *aac(6)-Iaa*	8	Ser83Phe Asp87Asn	Thr57Ser Ser80Ile	IncI1 (85,307); ColE (4,105); nid (2,185; 3,985; 4,164; 5,413)

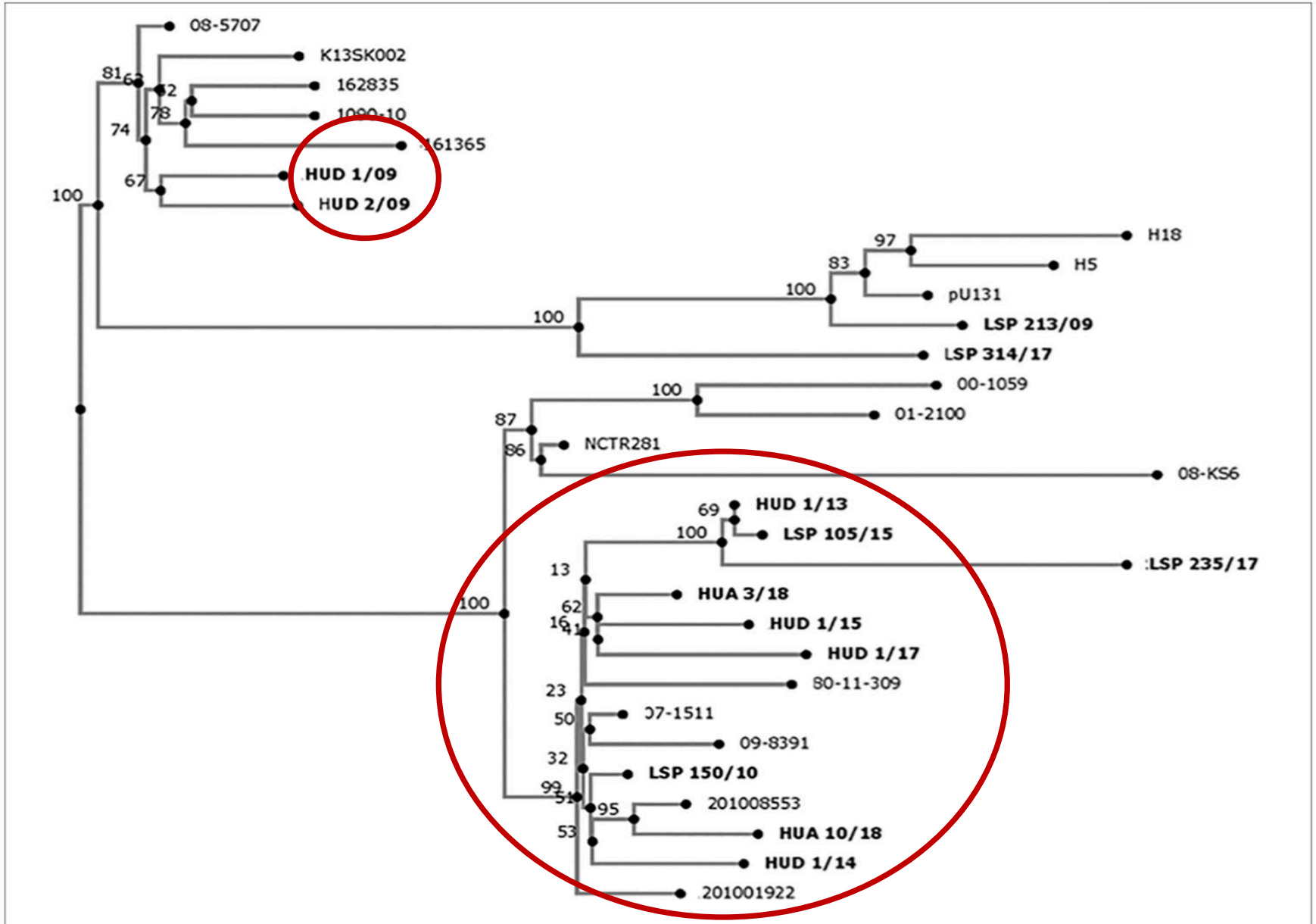
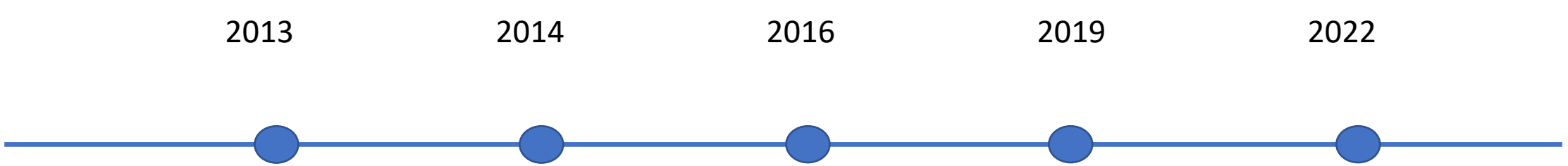


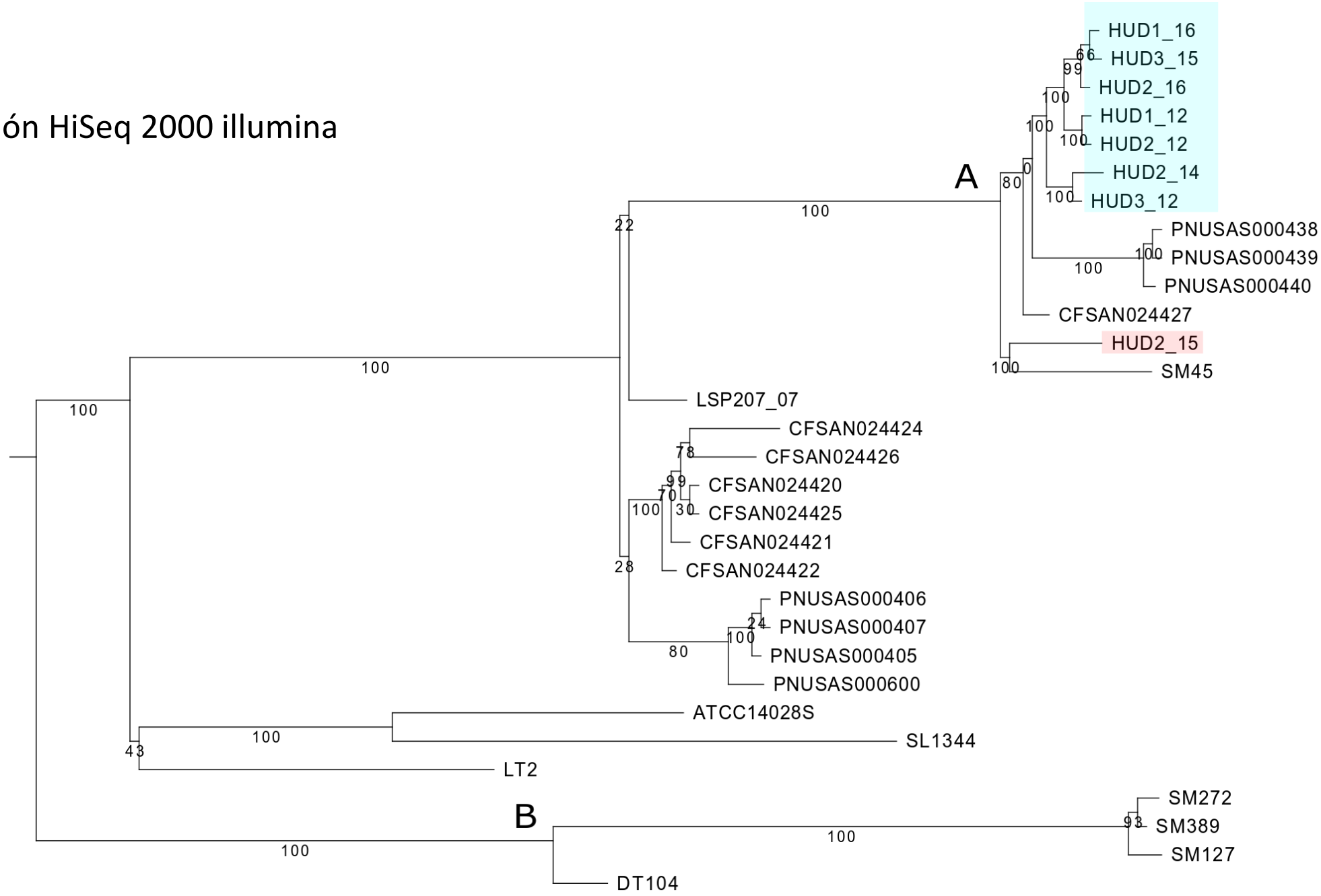
FIGURE 2 | Phylogenetic tree showing the relationships between *Salmonella enterica* serovar Kentucky ST198-Cip^R isolates from Spanish hospitals (highlighted in bold), and other *S.* Kentucky ST198 isolates. The whole genome single nucleotide polymorphism based analysis was established with the CSI Phylogeny 1.4 (https://cge.cbs.dtu.dk/services/CSIPhylogeny/), using the genome of *S.* Kentucky strain 201001922 (accession number CP028357) as reference. Numbers at the nodes represent bootstrap values based on 1,000 replicates.

Salmonellas resistentes Cef 3ª generación

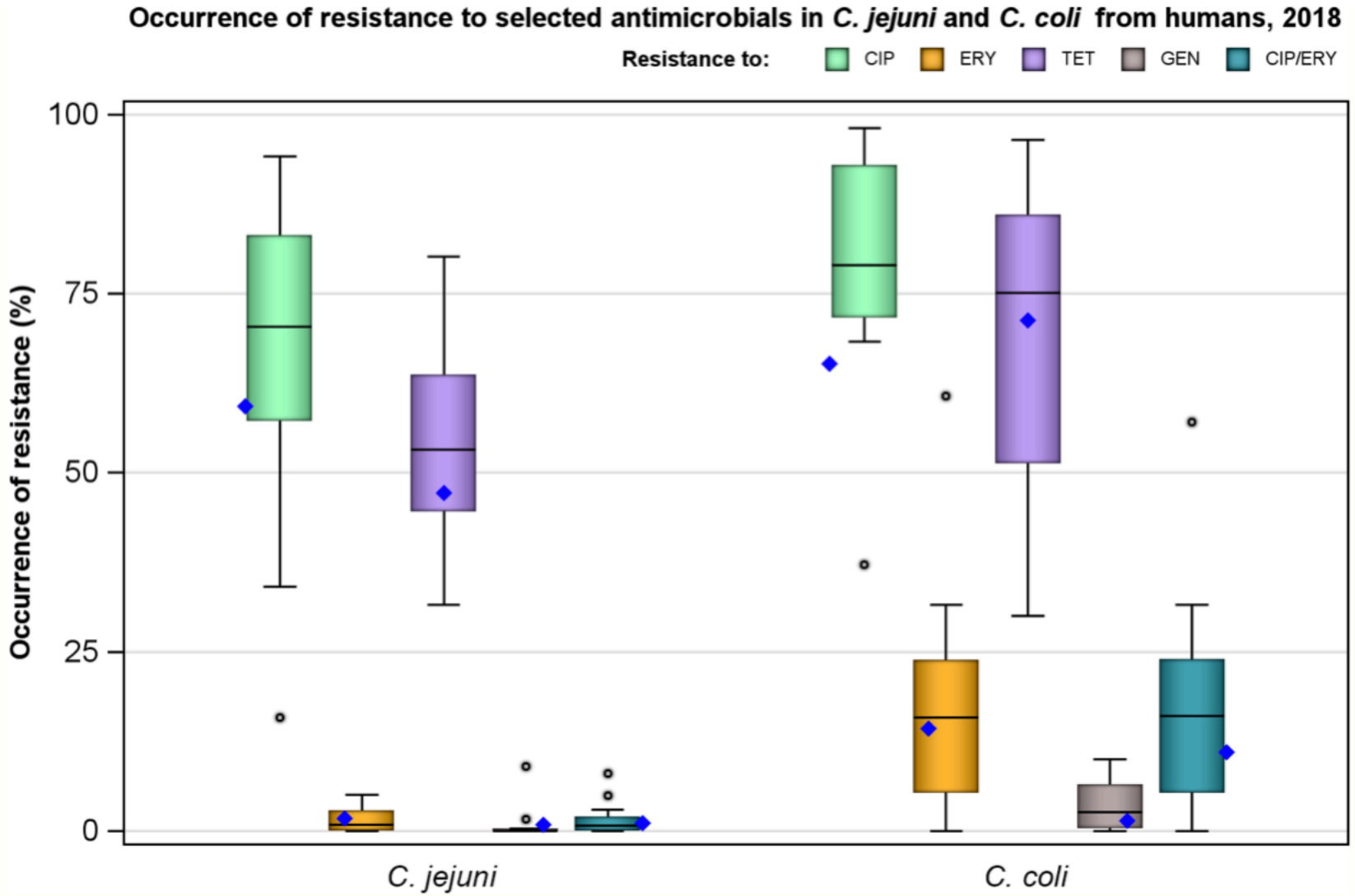


2013	2014	2016	2019	2022
S. typhimurium BLEE, SXT	*S. typhimurium* BLEE, SXT	*S.typhimurium* BLEE, SXT	*S. typhimurium* BLEE,CIP	*S. typhimurium* BLEE
	S.typhimurium BLEE	*S.typhimurium* BLEE, SXT	*S. infantis* BLEE, SXT	
			S. bredeney BLEE	

Secuenciación HiSeq 2000 illumina



Campylobacter spp



Horizontal line represents median, and blue diamond represents the resistance at the reporting-MS level.

Resistencias de Campylobacter en personas. España/UE

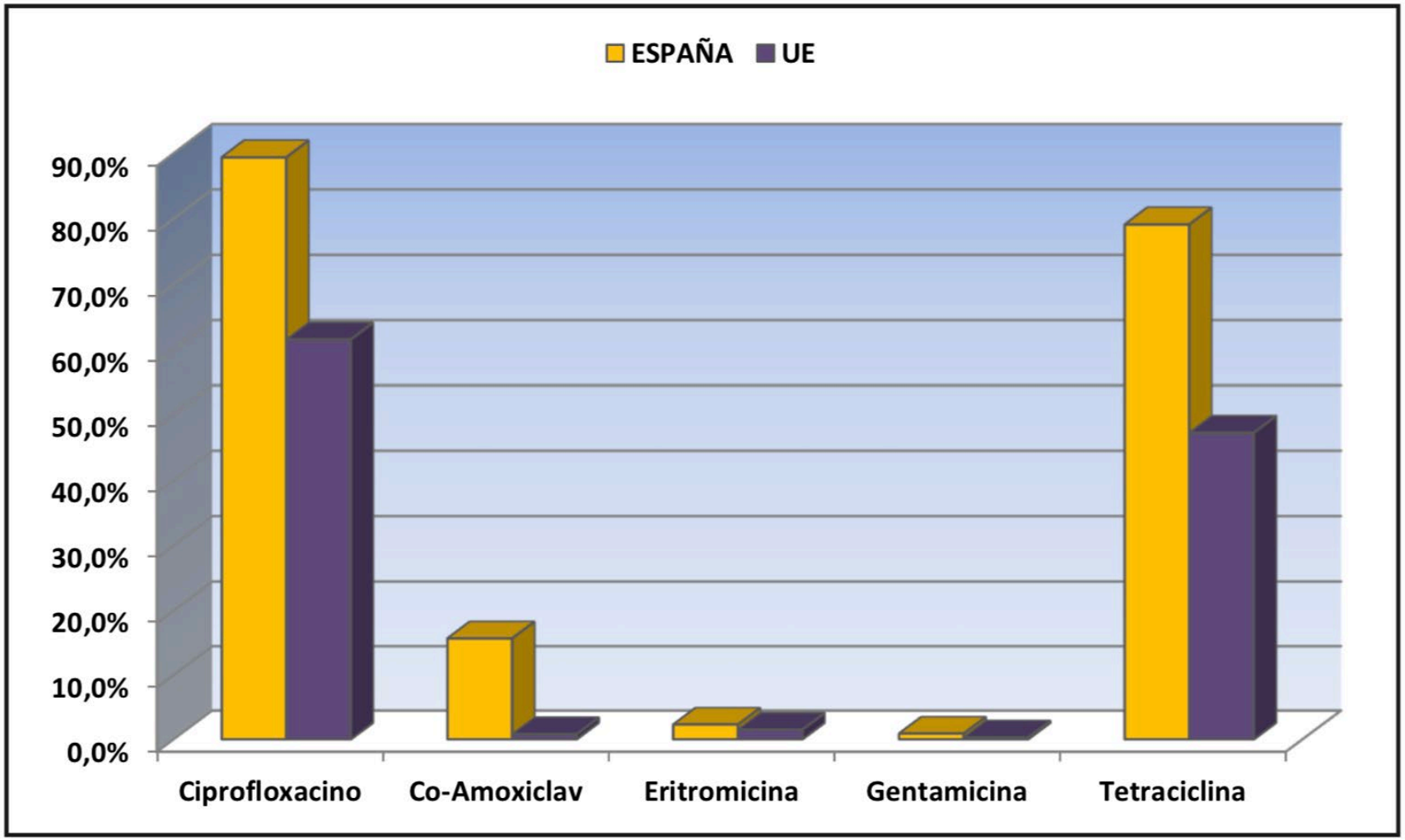
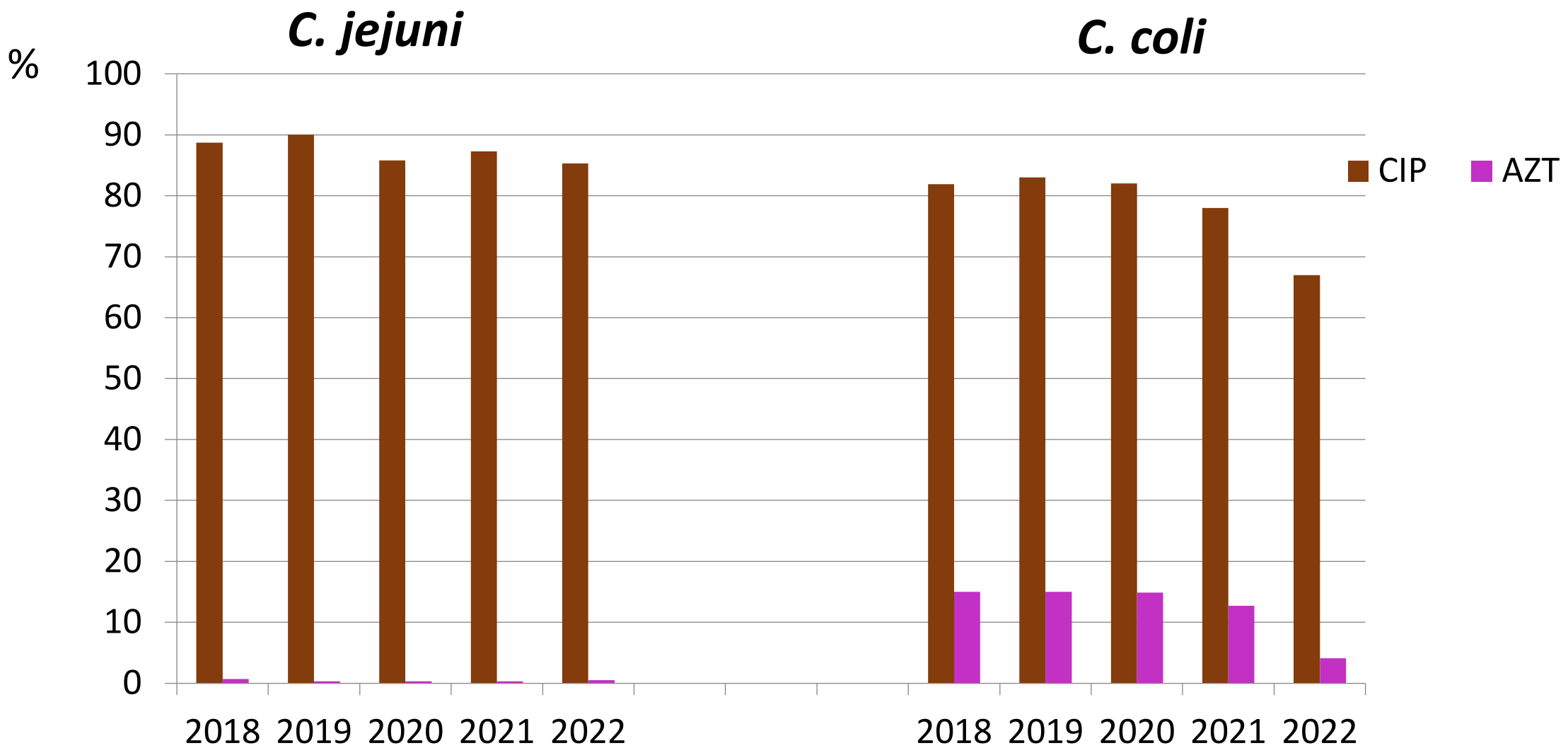


Figura 2.1.1.6
Comparativa España-UE: Porcentaje de aislados de *Campylobacter jejuni* en personas, microbiológicamente resistentes a cada antibiótico, en el año 2019.
Fuente: Informe de la resistencia antimicrobiana en bacterias zoonósicas e indicadoras de personas, animales y alimentos de la Autoridad Europea de Seguridad Alimentaria, (EFSA) 2019

Resistencias Campylobacter spp Gipuzkoa



RED COLABORATIVA MULTIDISCIPLINAR PARA LA VIGILANCIA DE BACTERIAS CON RESISTENCIA ANTIBIOTICA EN LA CAPV

Campylobacter spp

- Hospital Universitario Basurto
- Hospital Universitario Donostia
- Neiker
- Laboratorio de Salud Publica de Gipuzkoa.


Plan Nacional
Resistencia
Antibióticos
Vigilancia
Nacional de la
Resistencia a
Antimicrobianos
Línea estratégica I:
Vigilancia
Sanidad
animal
Salud
humana

Eskerrik asko!!!!!!

¡Muchas gracias!