



# EVOLUCIÓN DEL PROYECTO BACTERIEMIA ZERO “BZ”

MERCEDES PALOMAR  
IRBLL ARNAU DE VILANOVA (LLEIDA)

JORNADA DEL PROGRAMA DE SEGURIDAD EN LOS PACIENTES CRÍTICOS.  
PROYECTOS ZERO. MADRID 12-12-2017

## ICU-ACQUIRED INFECTIONS. ENVIN-HELICS 1994-2006

Consolidated surveillance

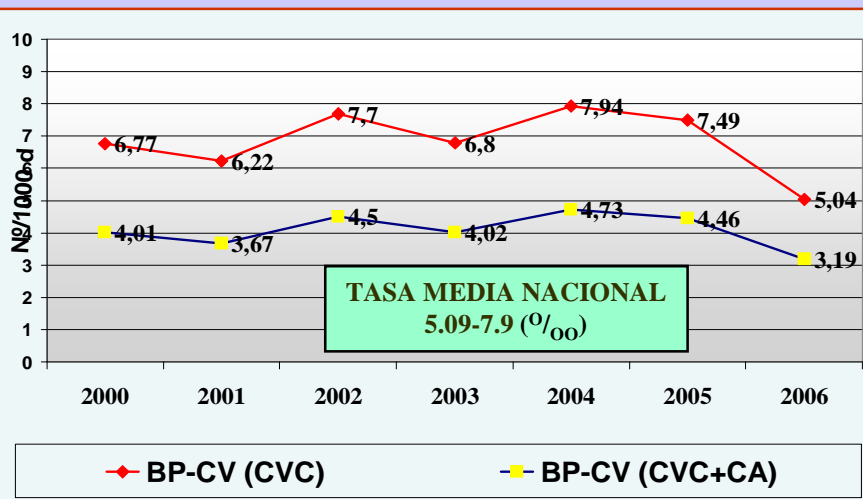
Rates: no reduction

## VENTILATOR ASSOCIATED PNEUMONIA

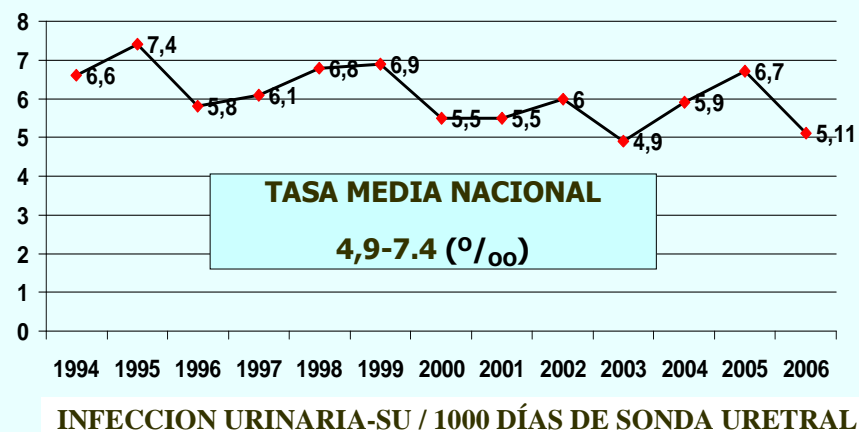


N-VM / 1000 días de VM

## CATHETER RELATED BACTEREMIA



## URINARY TRACT INFECTION-UC

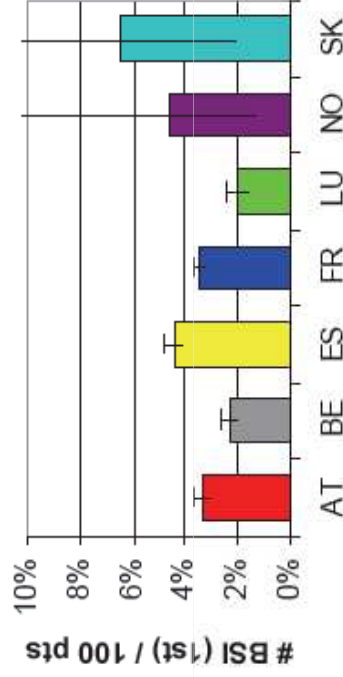


# Impact of risk-adjustment on inter-country comparisons of ICU infections indicators

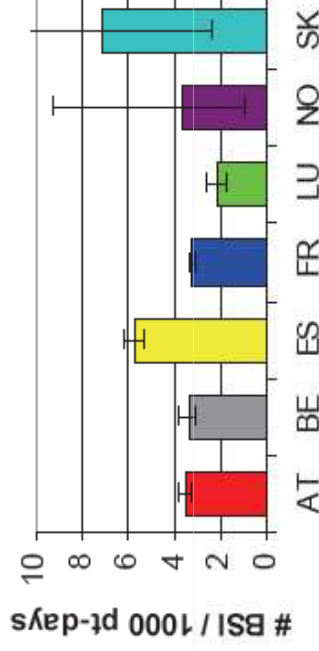
Carl Suetens<sup>1</sup>, Alain Lepape<sup>2</sup>, Mercedes Palomar<sup>3</sup>, Michael Hiesmayr<sup>4</sup>, for the HELICS-ICU working group  
(1) Scientific Institute of Public Health, Brussels (2) C. Clin Sud-Est, Lyon (3) Hospital Val d'Hebron, Barcelona (4) Vienna Medical University

**Figure 5-6: Inter-country comparisons of ICU-acquired bloodstream infections (BSI) and origin of reported BSI**

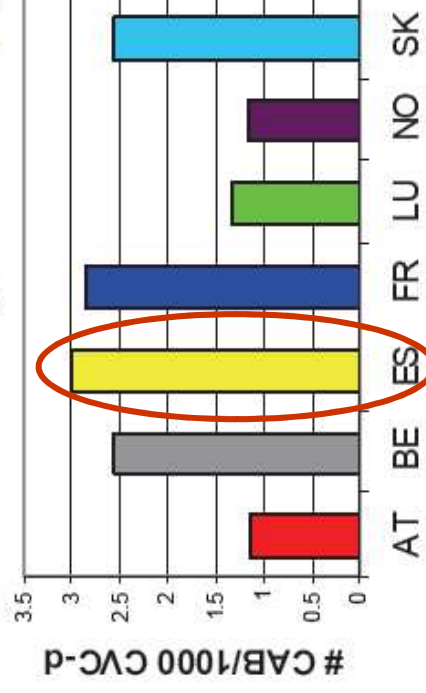
**BSI cumulative incidence (%)**



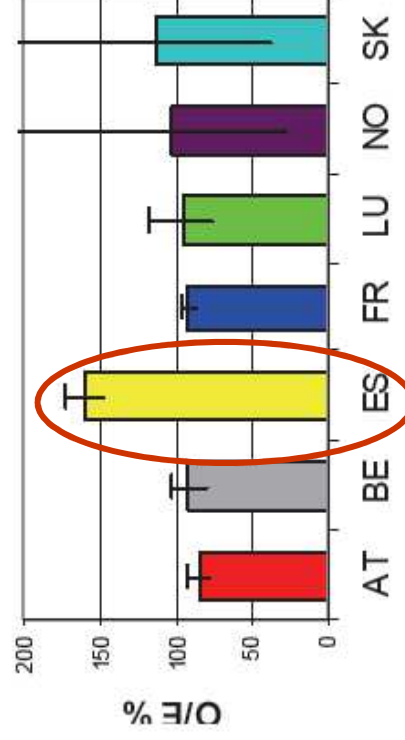
**Incidence density (/1000 pt-days)**



**Cath-ass. BSI rate (/1000 cvc days)**



**BSI standardized infection ratio (O/E)**

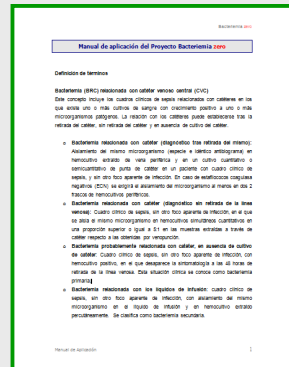


# Bacteriemia zero

## Guía de navegación



## Protocolo



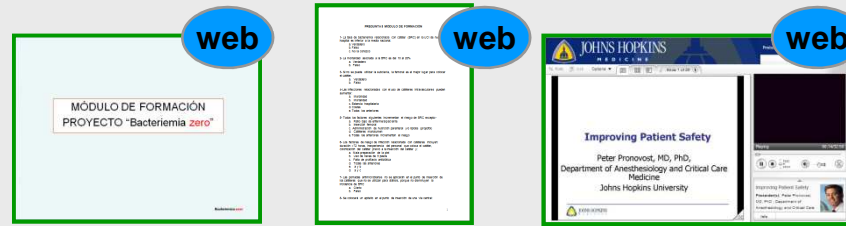
## Manual de aplicación

## Instrumentos

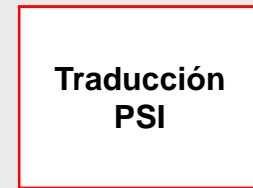


Checklist inserción    Objetivos diarios    Inventario +registro    Cuestionario cultura    Equipo líder    Problemas de seguridad    Aprender de errores

## Material formación

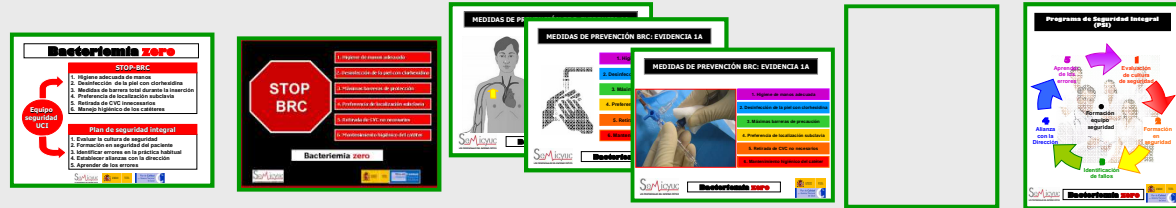


Curso STOP-BRC    Test STOP-BRC    Curso PSI



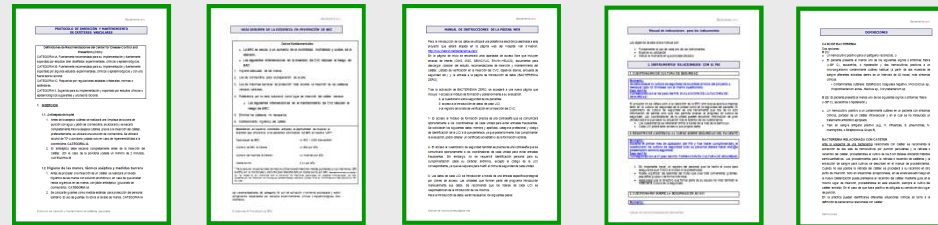
Traducción PSI

## Pósters



Resumen    STOP-BRC    PSI

## Documentos apoyo



Protocolo inserción    Resumen evidencia    Manual web    Manual Instrumentos    Definiciones

# Impact of a National Multimodal Intervention to Prevent Catheter-Related Bloodstream Infection in the ICU: The Spanish Experience

Mercedes Palomar, MD, PhD<sup>1</sup>; Francisco Álvarez-Lerma, MD, PhD<sup>2</sup>; Alba Riera, RN<sup>3</sup>; María Teresa Díaz, RN<sup>4</sup>; Ferrán Torres, MD, PhD<sup>5</sup>; Yolanda Agra, MD, PhD<sup>6</sup>; Itziar Larizgoitia, MD, MPH, PhD<sup>4</sup>; Christine A. Goeschel, ScD, MPA, MPS, RN<sup>7</sup>; Peter J. Pronovost, MD, PhD<sup>7</sup>; on behalf of the Bacteremia Zero Working Group

**Objective:** Prevention of catheter-related bloodstream infection is a basic objective to optimize patient safety in the ICU. Building on the early success of a patient safety unit-based comprehensive intervention (the Keystone ICU project in Michigan), the Bacteremia Zero project aimed to assess its effectiveness after contextual adaptation at large-scale implementation in Spanish ICUs.

**Design:** Prospective time series.

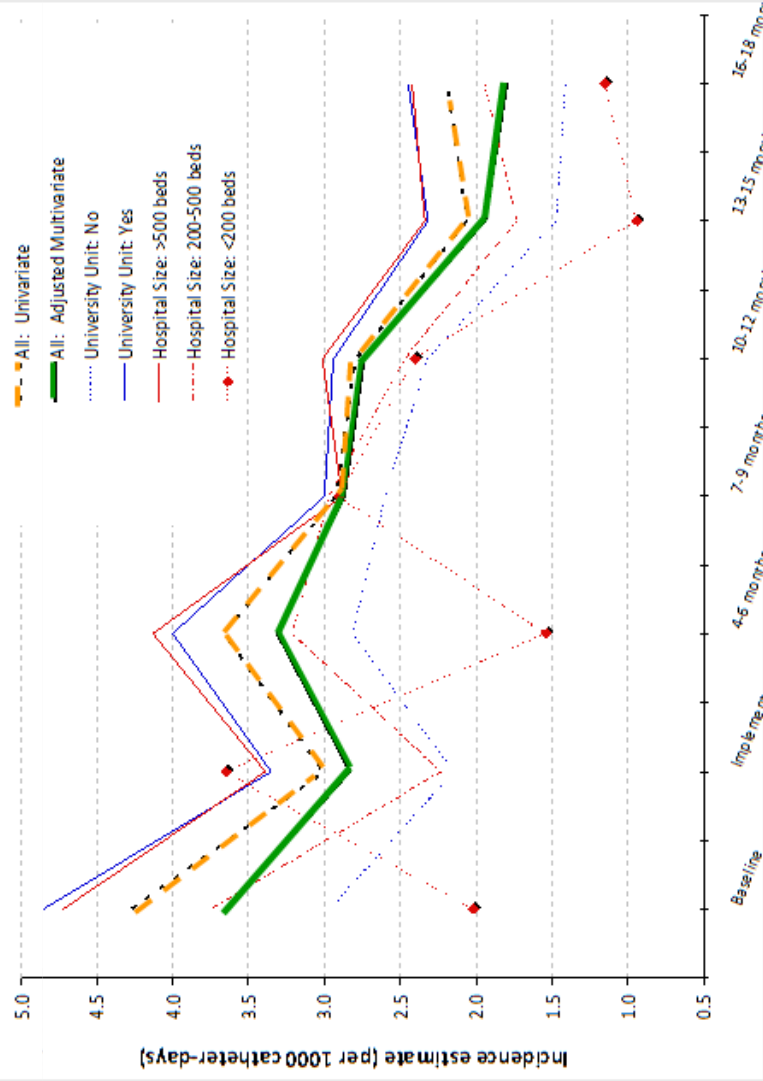
**Setting:** A total of 192 ICUs throughout Spain.

**Patients:** All patients admitted to the participating ICUs during the study period (baseline April 1 to June 30, 2008; intervention from January 1, 2009, to June 30, 2010).

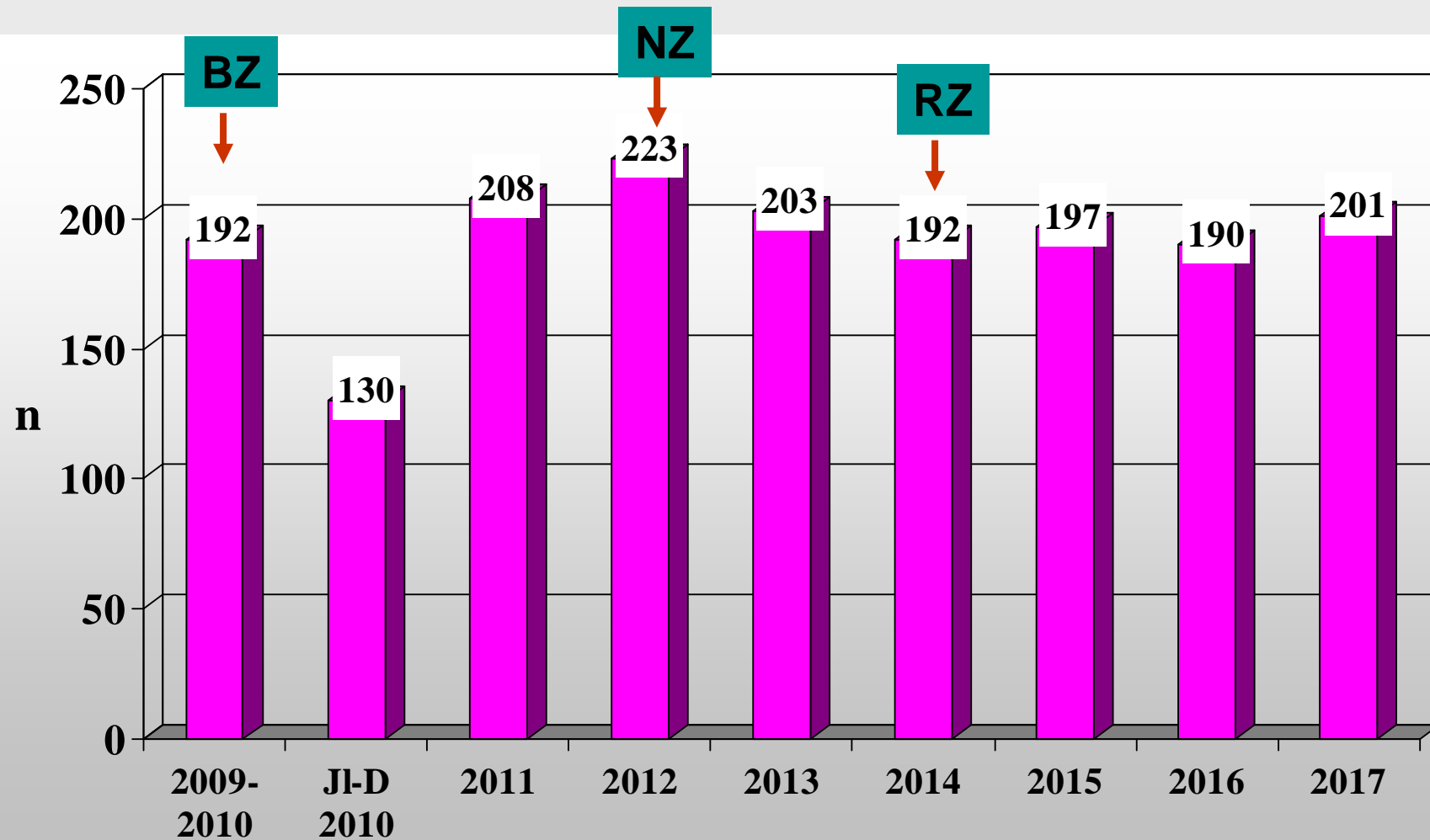
**Intervention:** Engagement, education, execution, and evaluation were key program features. Main components of the intervention included a bundle of evidence-based clinical practices during admission and maintenance of catheters and a unit-based safety protocol (including patient safety training and identification and analysis of errors through patient safety rounds) to improve the safety of catheter-related care. **Measurements and Main Results:** The number of catheter-related bloodstream infections was expressed as median and interquartile range. Poisson distribution was used to calculate incidence

rates and risk estimates. The participating ICUs accounted for 68% of all ICUs in Spain. Catheter-related bloodstream infection was reduced after 16–18 months of participation (median 3.07 vs 1.12 episodes per 1,000 catheter-days,  $p < 0.001$ ). The adjusted incidence rate of bacteremia showed a 50% risk reduction (95% CI, 0.39–0.63) at the end of the follow-up period compared with baseline. The reduction was independent of hospital size and type.

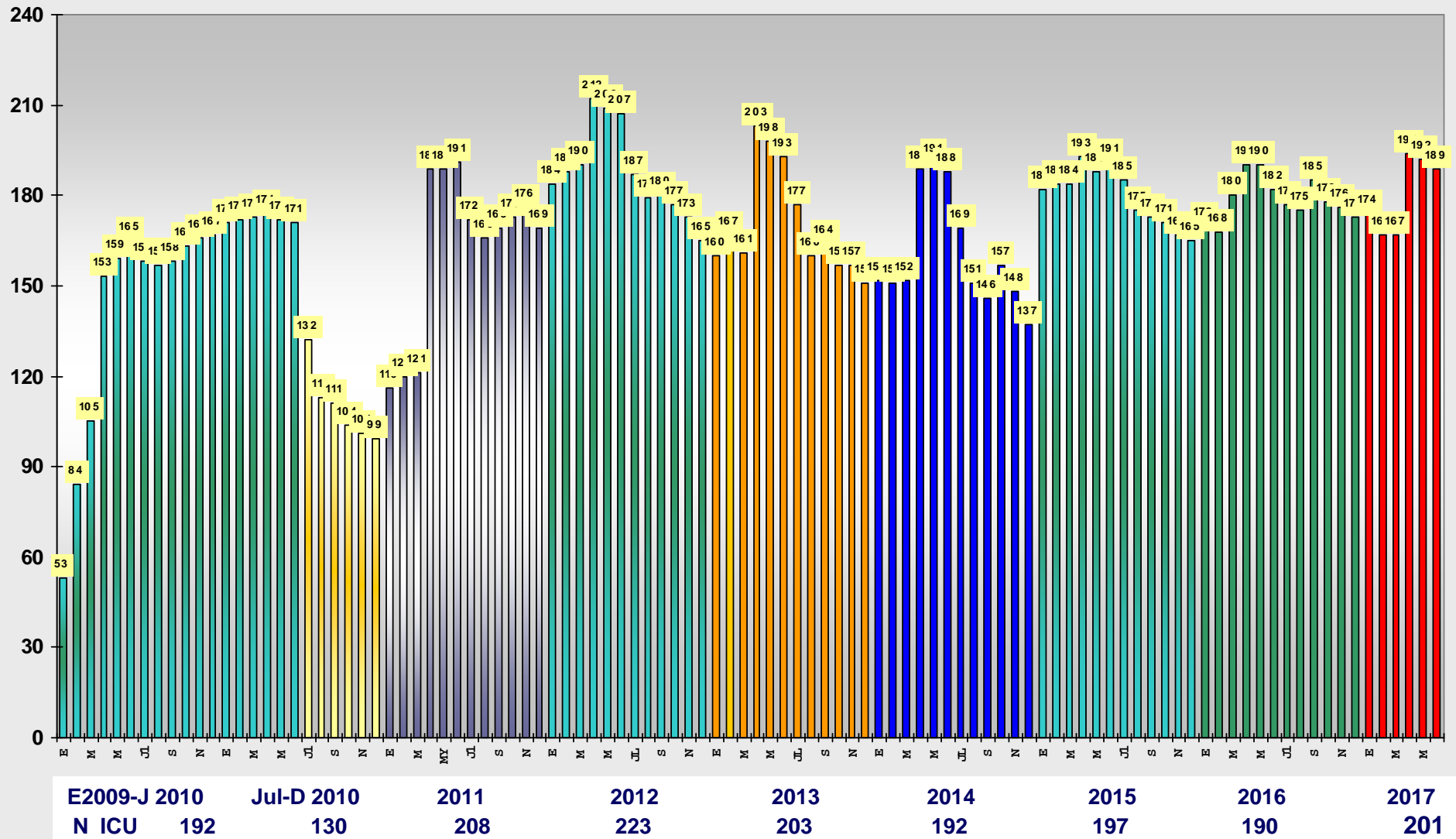
**Conclusions:** Results of the Bacteremia Zero project confirmed



# BZ: UCI PARTICIPANTES

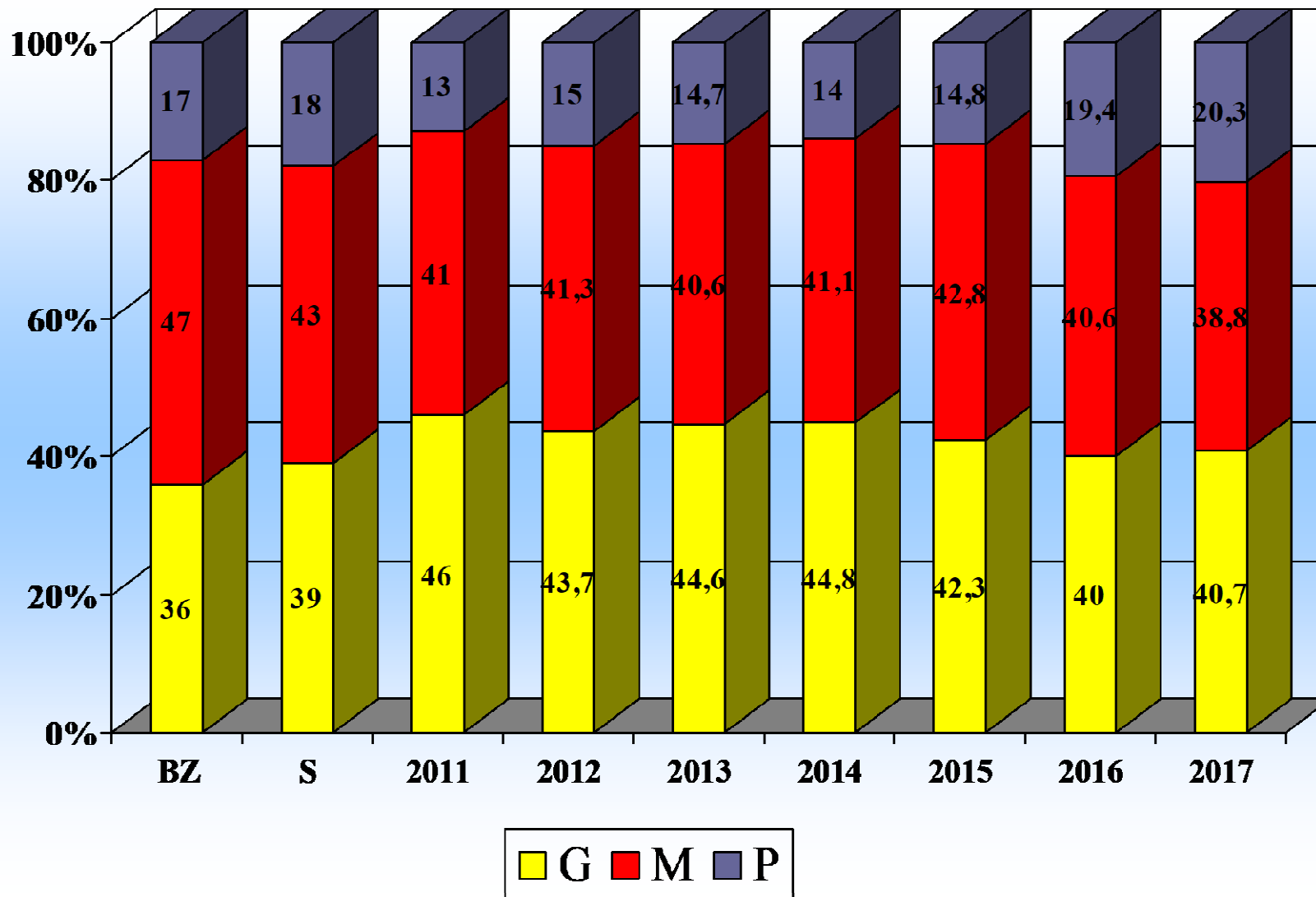


# BZ: UCI PARTICIPANTES



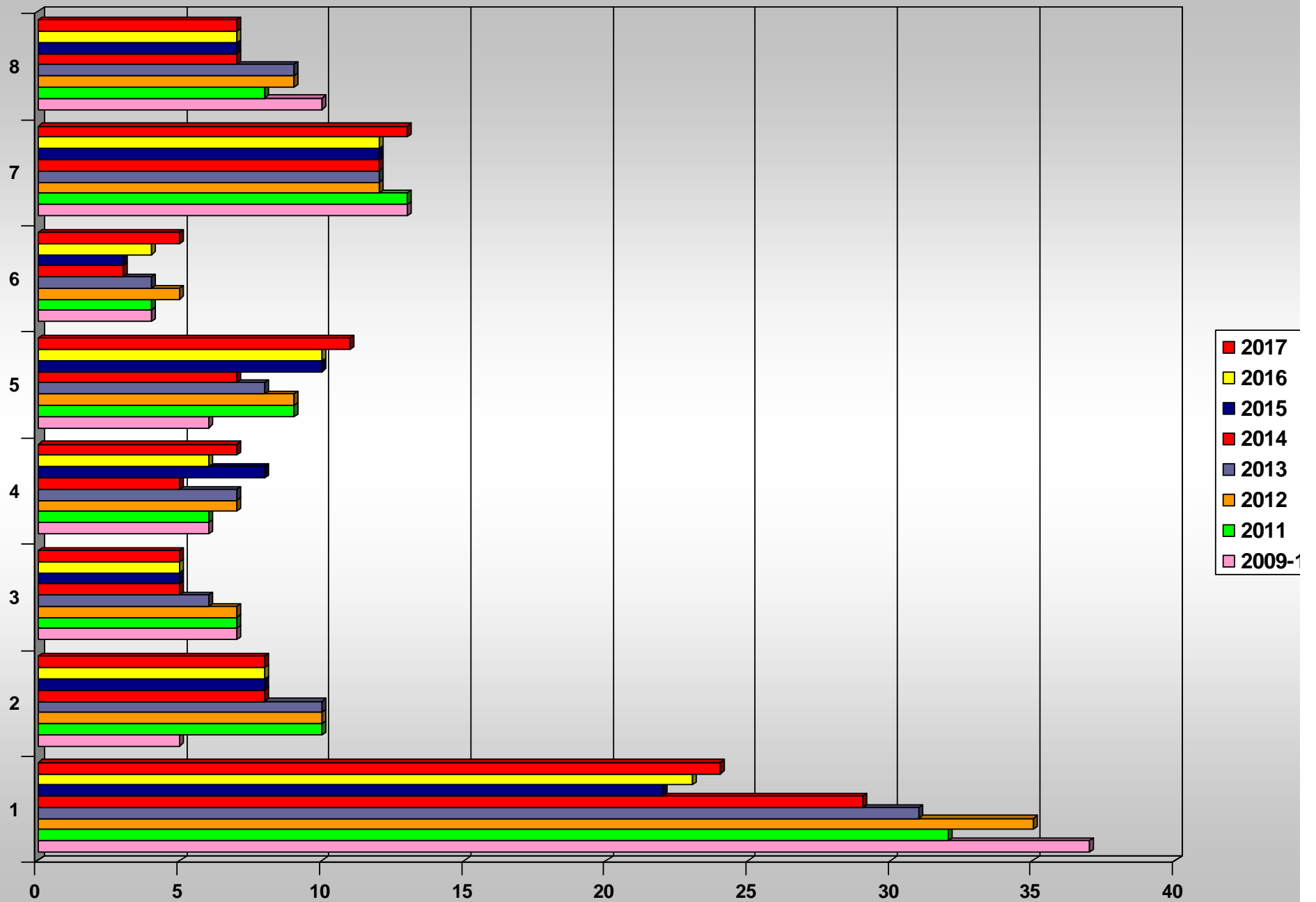
# CARACTERISTICAS DE LOS HOSPITALES

## TAMAÑO HOSPITAL

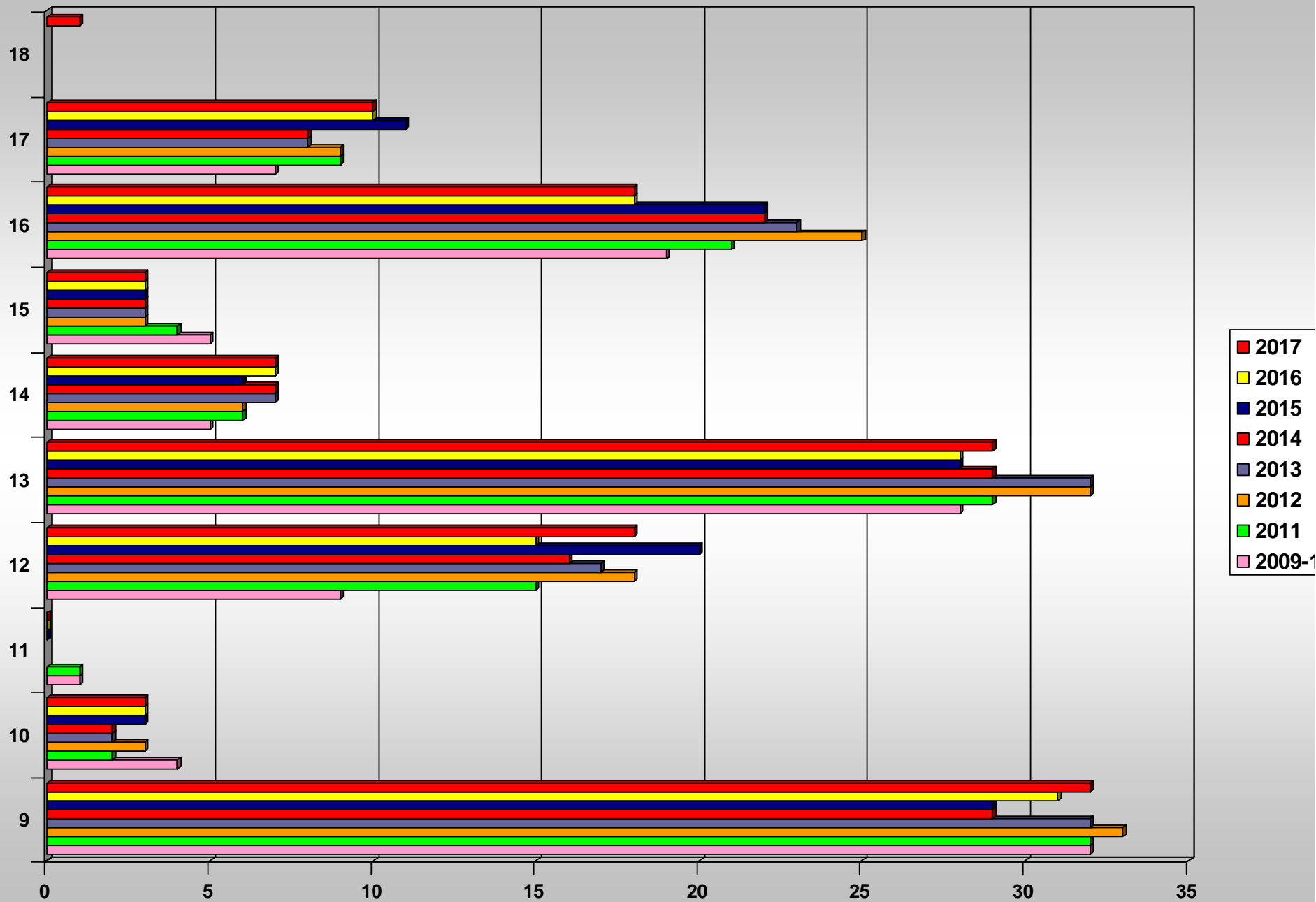




# N UCI x CCAA

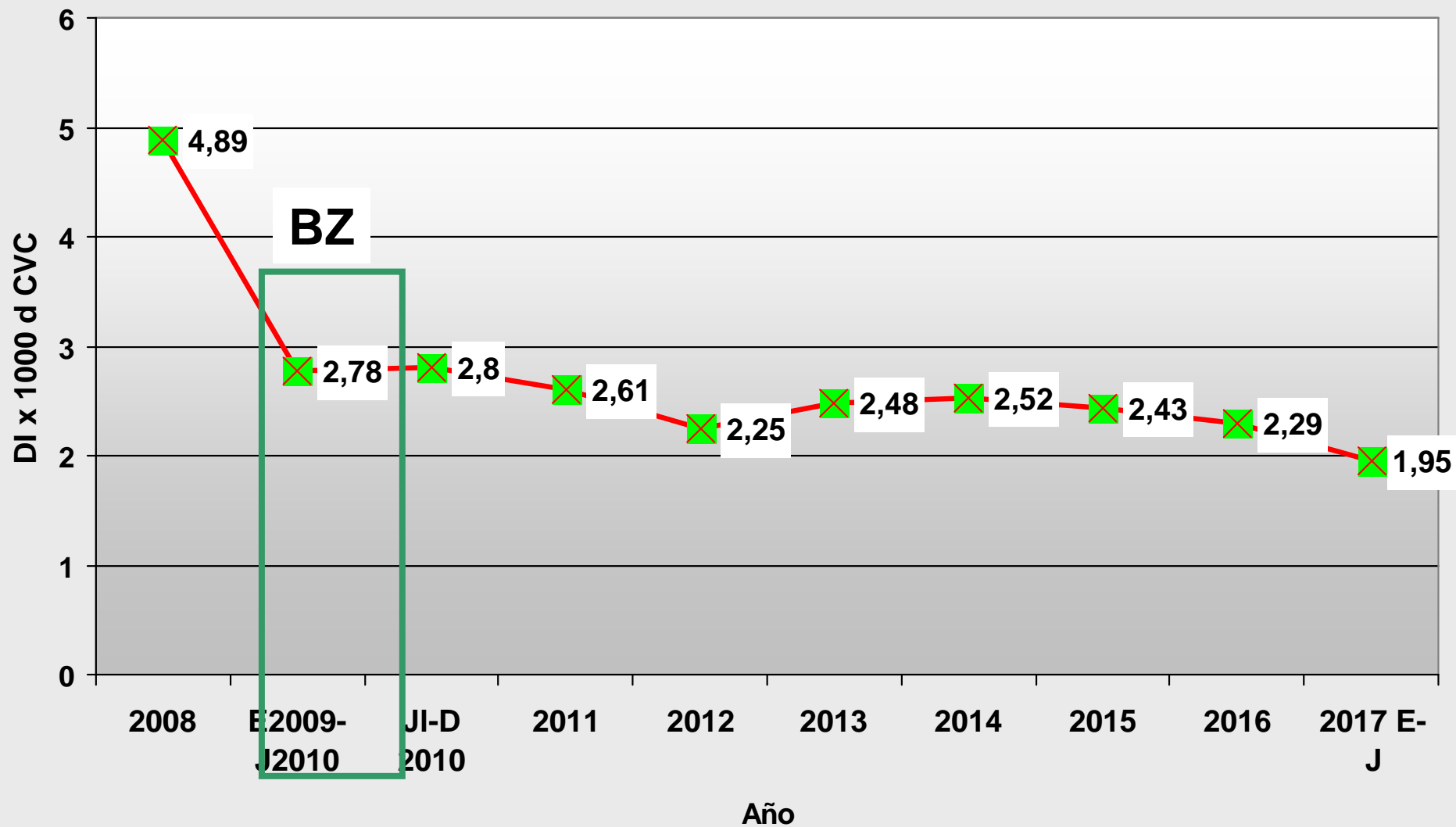


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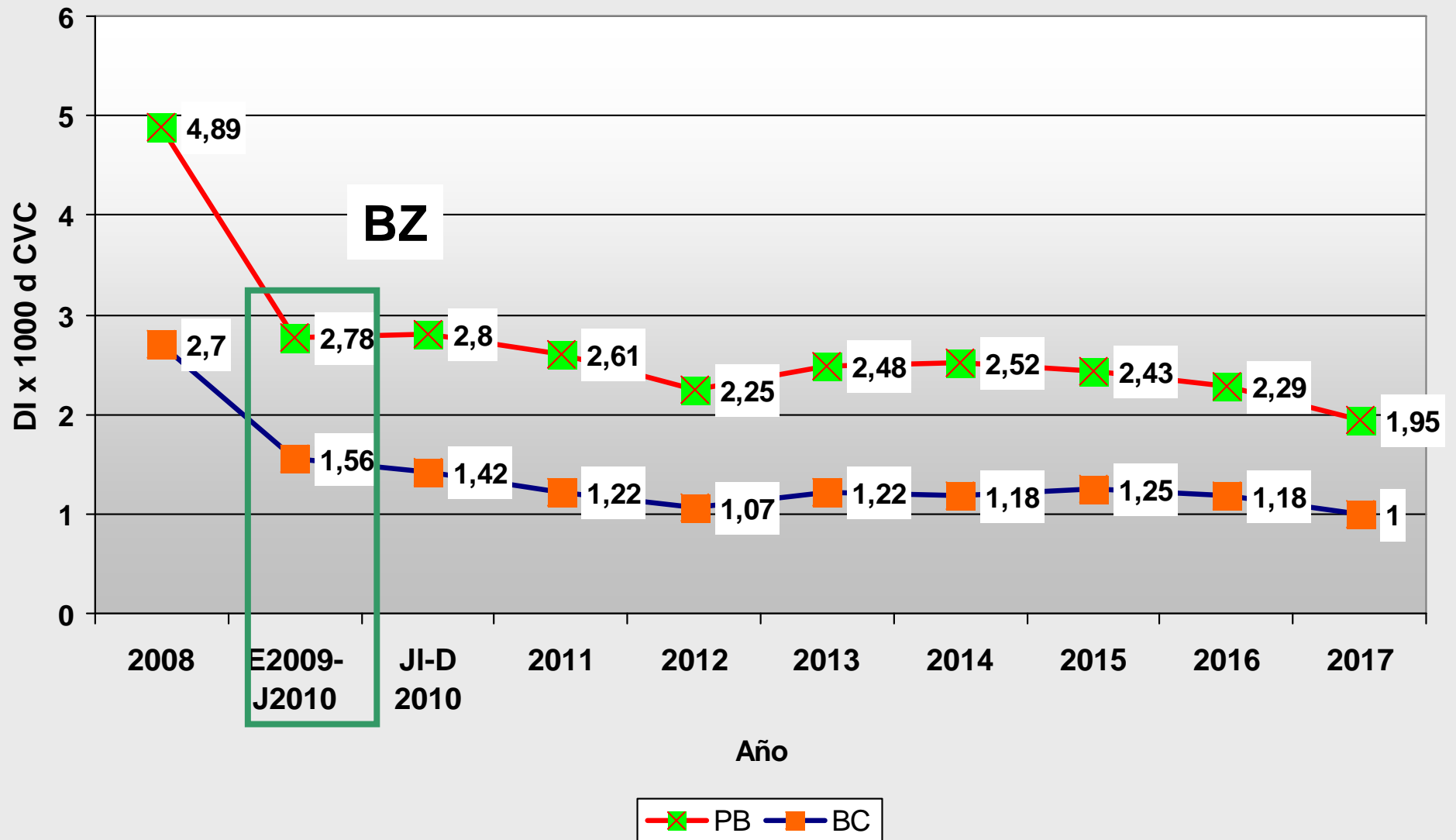




# BZ SOSTENIBILIDAD DE LAS TASAS (BACTEREMIAS CON ORIGIN EN CATETER + ORIGIN DESCONOCIDO)

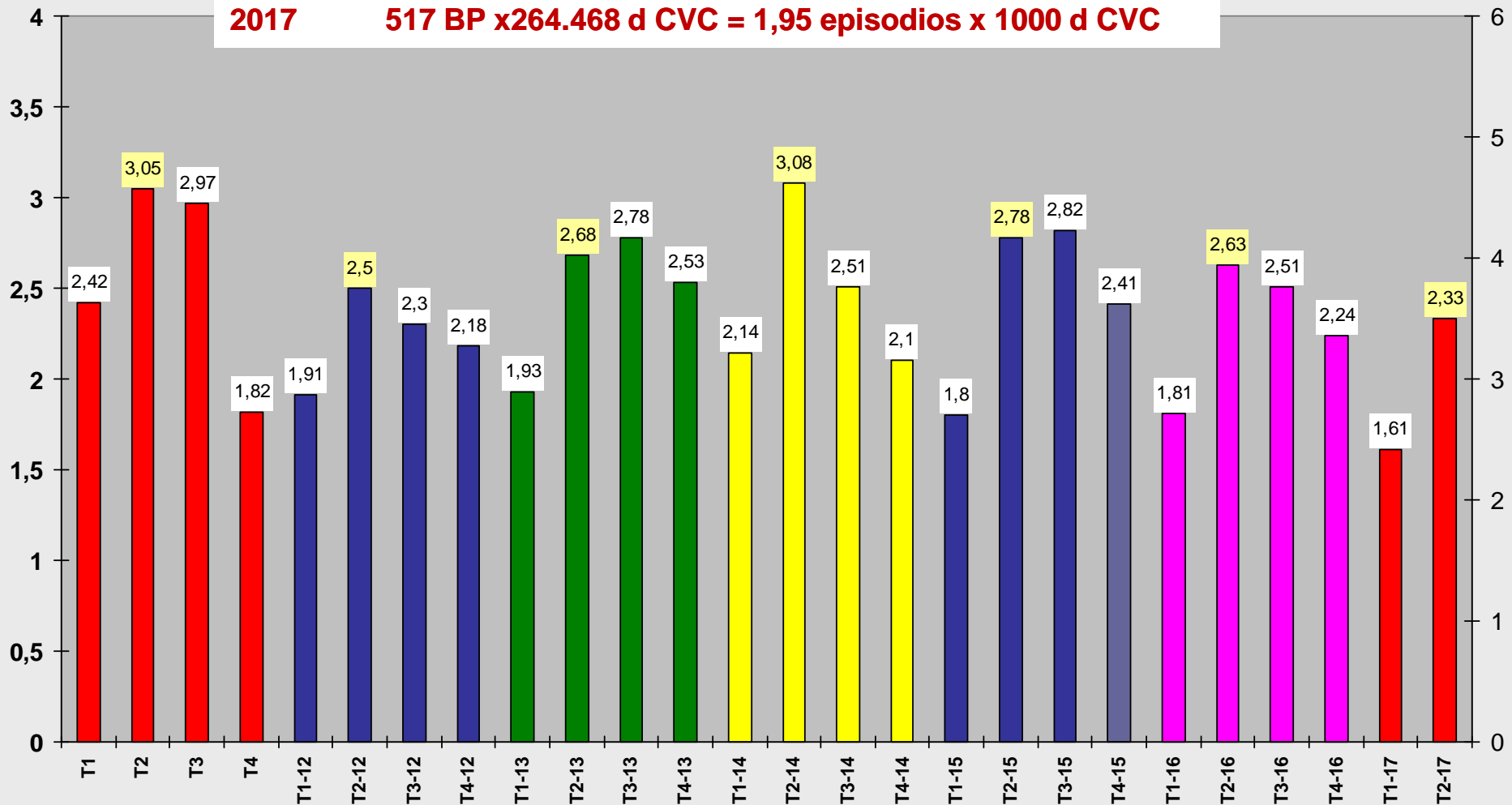


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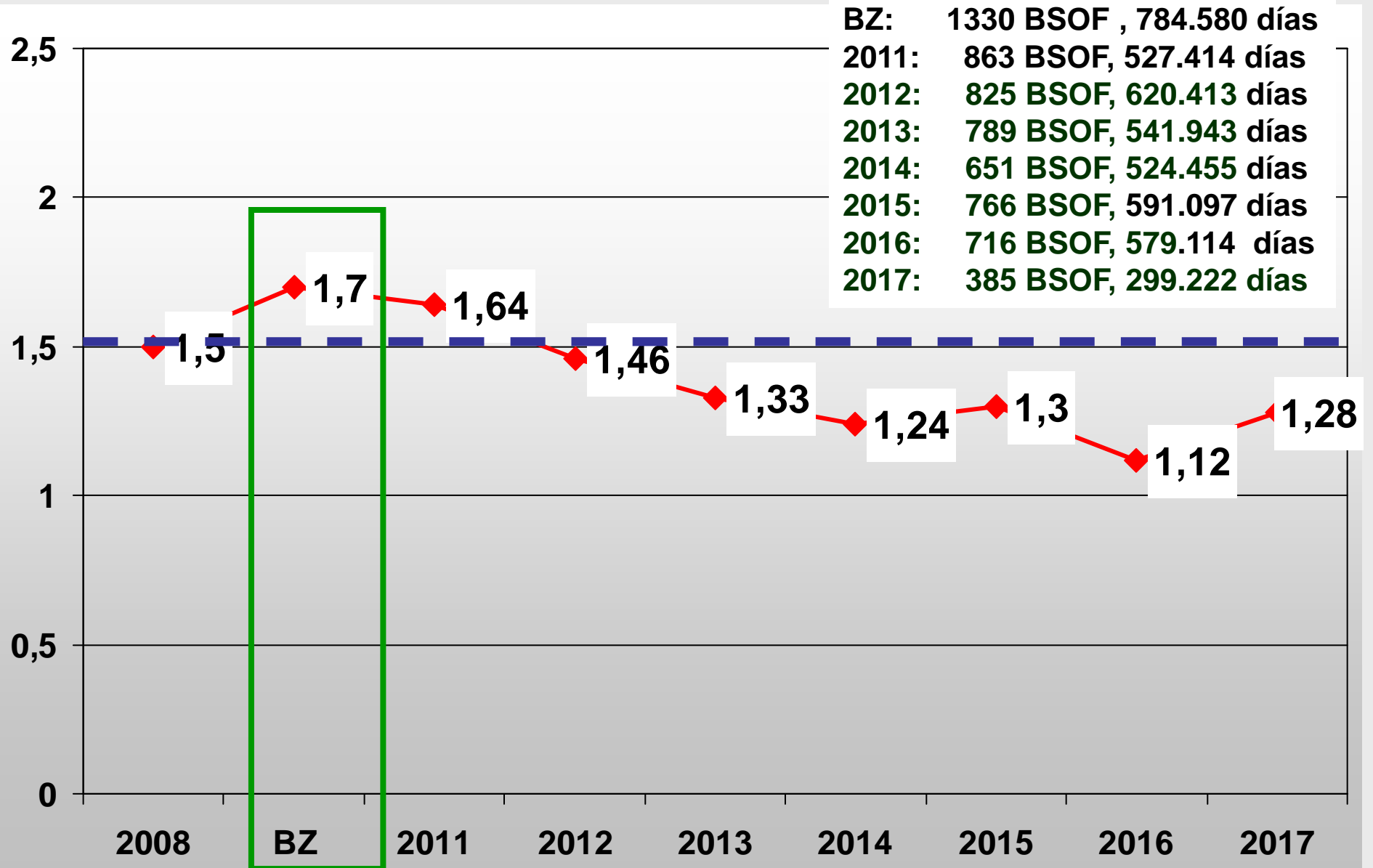


# TASAS BP: EVOLUCION TRIMESTRAL

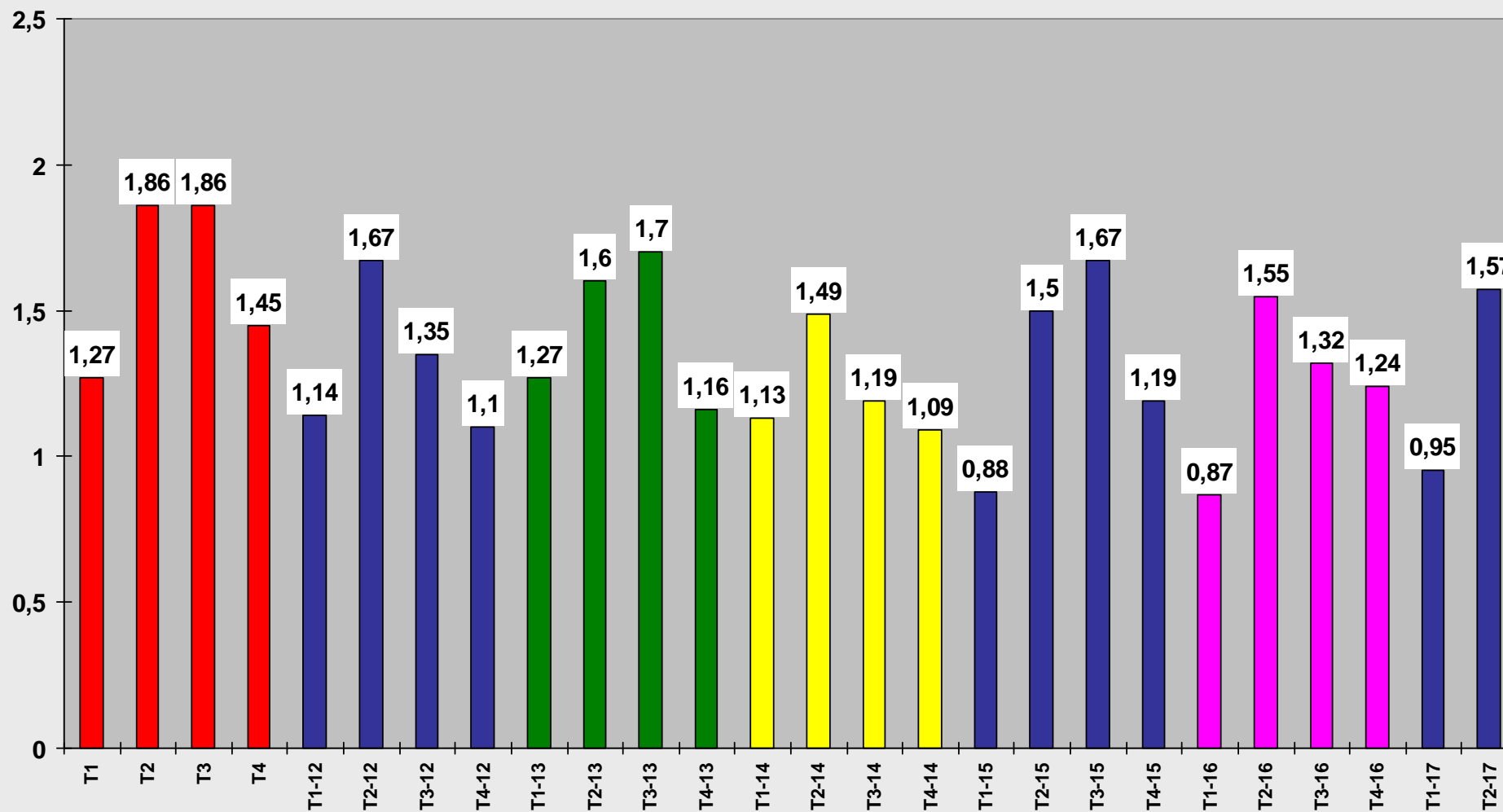
**2011:** 1071 BP x 410.729 d CVC = 2,61 episodios x 1000 d CVC  
**2012:** 1073 BP x 477.125 d CVC = 2,25 episodios x 1000 d CVC  
**2013:** 1022BP x 411.988 d CVC = 2,48 episodios x 1000 d CVC  
**2014:** 996 BP x 395.546 d CVC = 2,52 episodios x 1000 d CVC  
**2015:** 1084 BP x 446.187 d CVC = 2,43 episodios x 1000 d CVC  
**2016:** 1003 BP x 438.187 d CVC = 2,29 episodios x 1000 d CVC  
**2017:** 517 BP x 264.468 d CVC = 1,95 episodios x 1000 d CVC



# BSOF

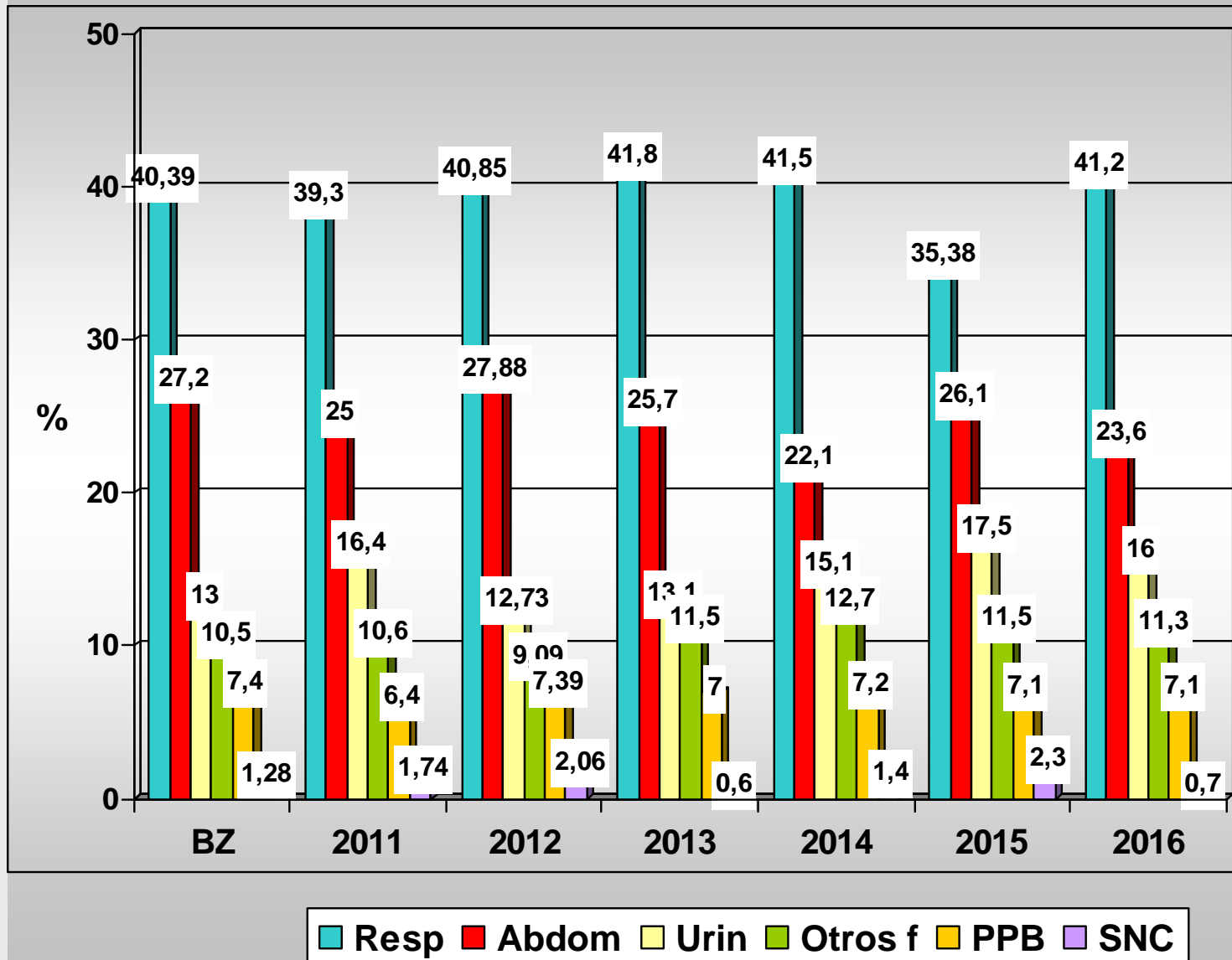


# TASAS BSOF: EVOLUCION TRIMESTRAL (2011-2017)

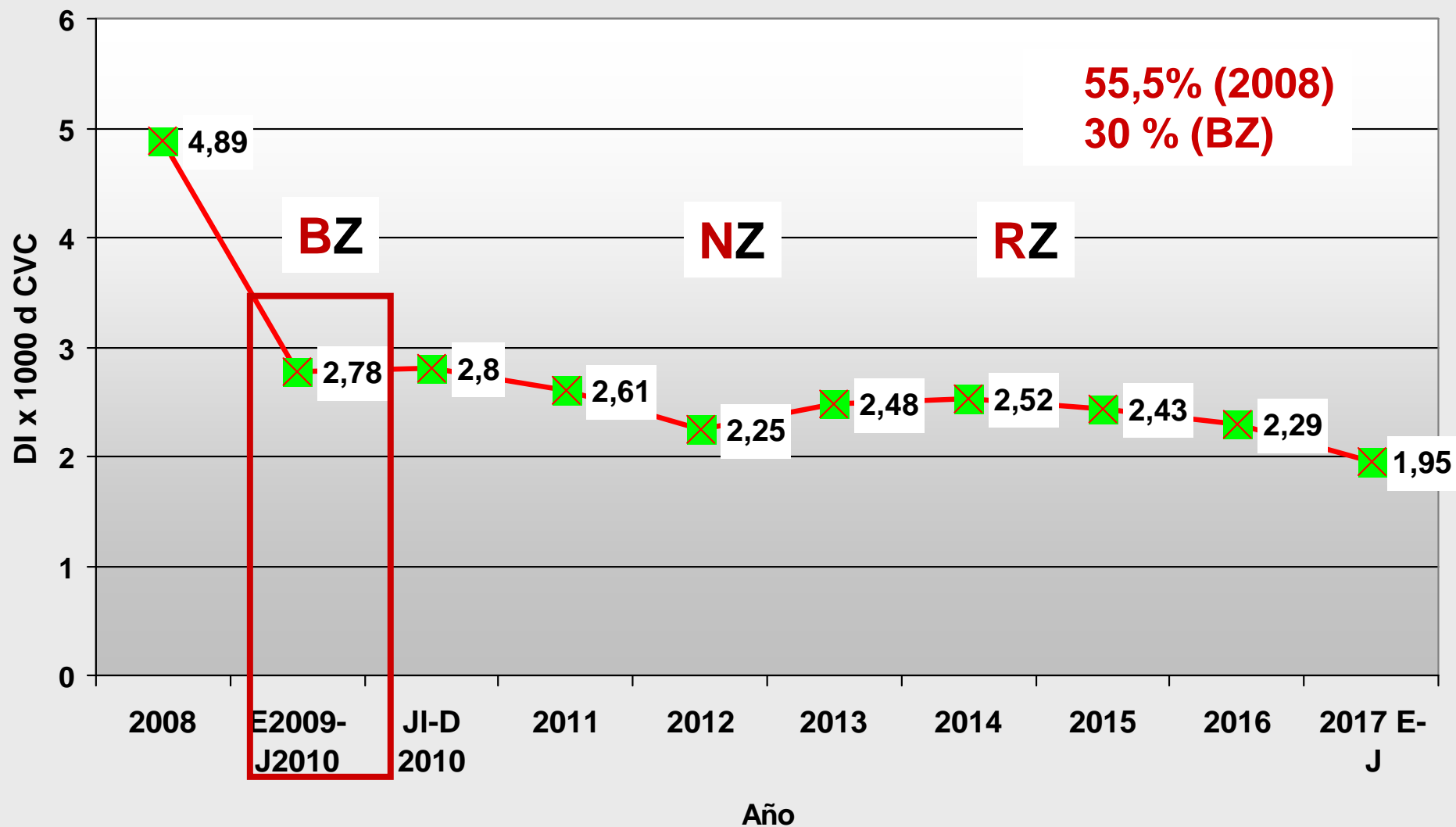




# BACTERIEMIAS SECUNDARIAS: ORIGEN



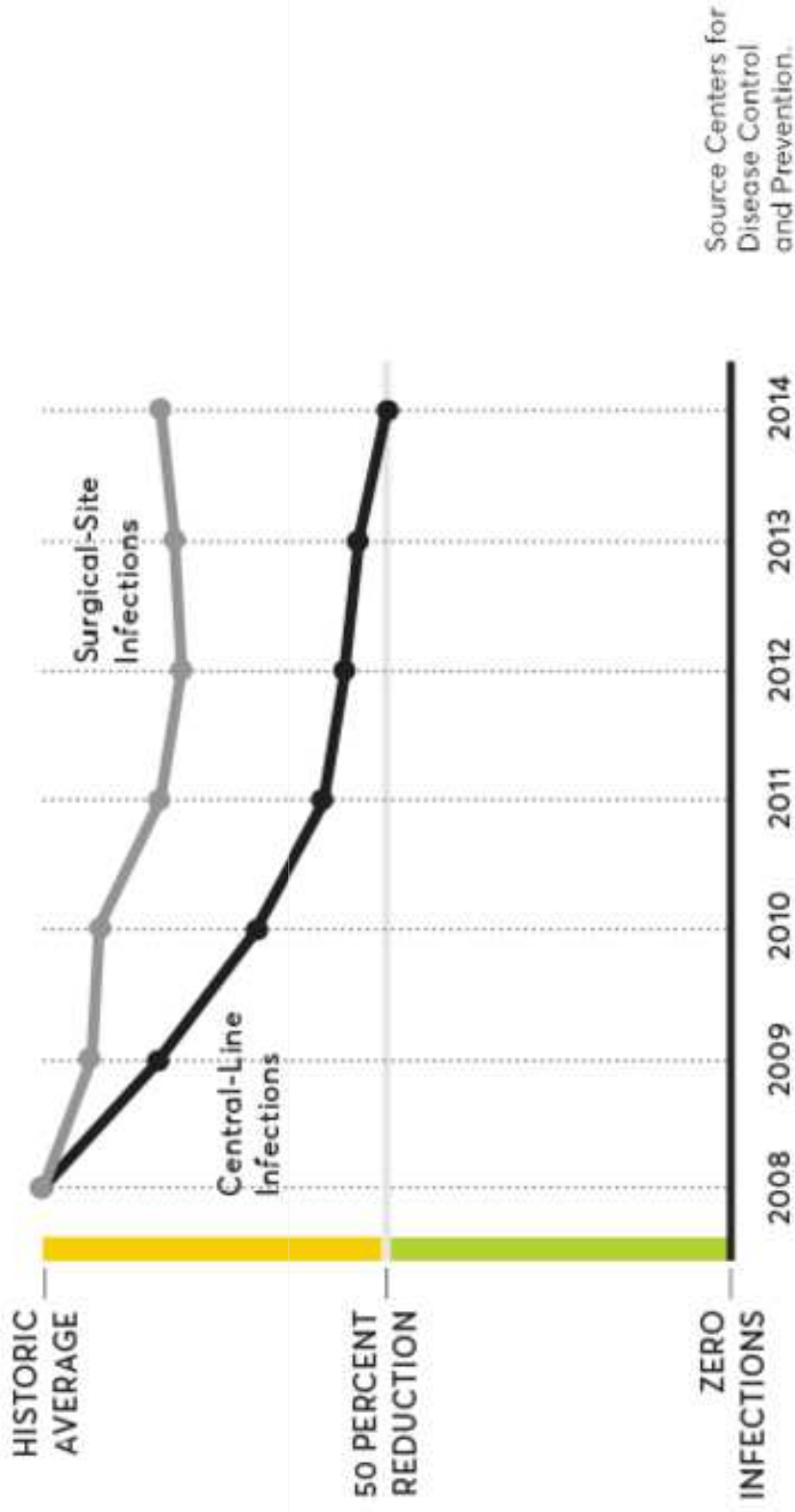
# BZ SOSTENIBILIDAD DE LAS TASAS (BACTEREMIAS CON ORIGIN EN CATETER + ORIGIN DESCONOCIDO)



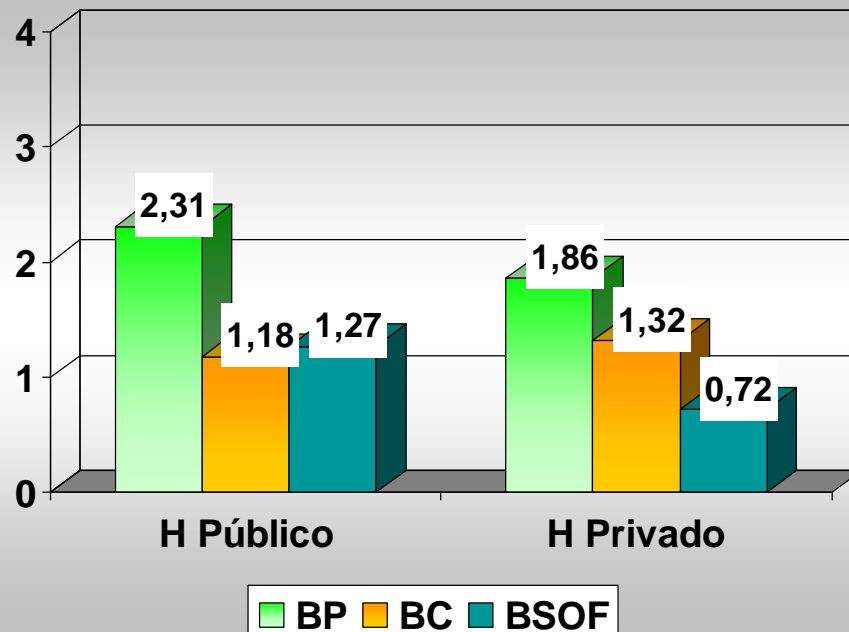
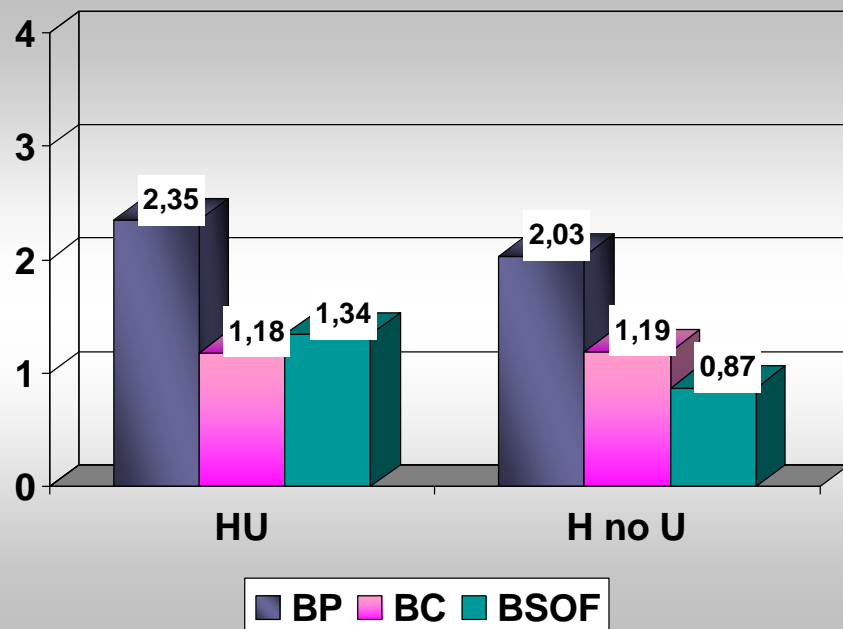
# Zero Tolerance for Deadly Hospital-Acquired Infections

Consumer Reports identifies which hospitals do a good job—and which don't

By Hallie Levine  
November 21, 2016

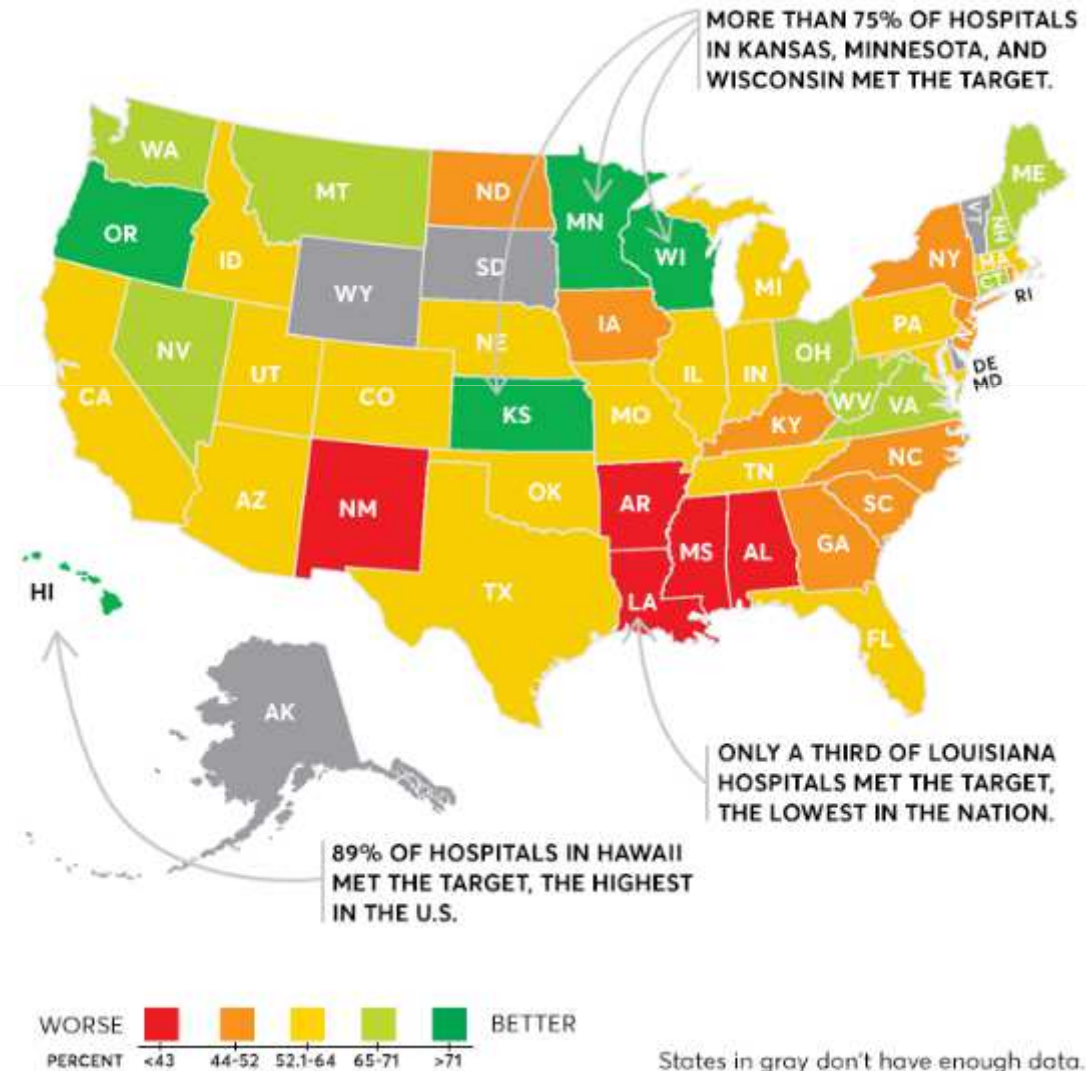


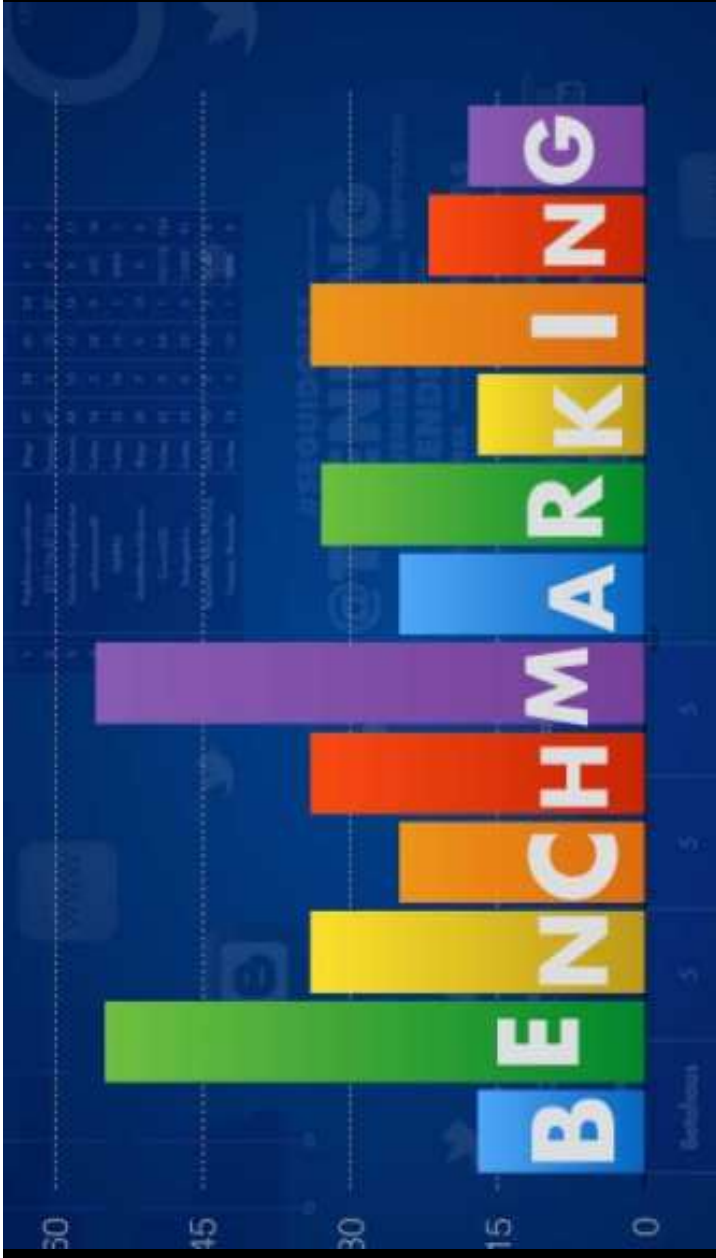
# TASAS BP, BC Y BSOF SEGÚN TIPO DE HOSPITAL 2016



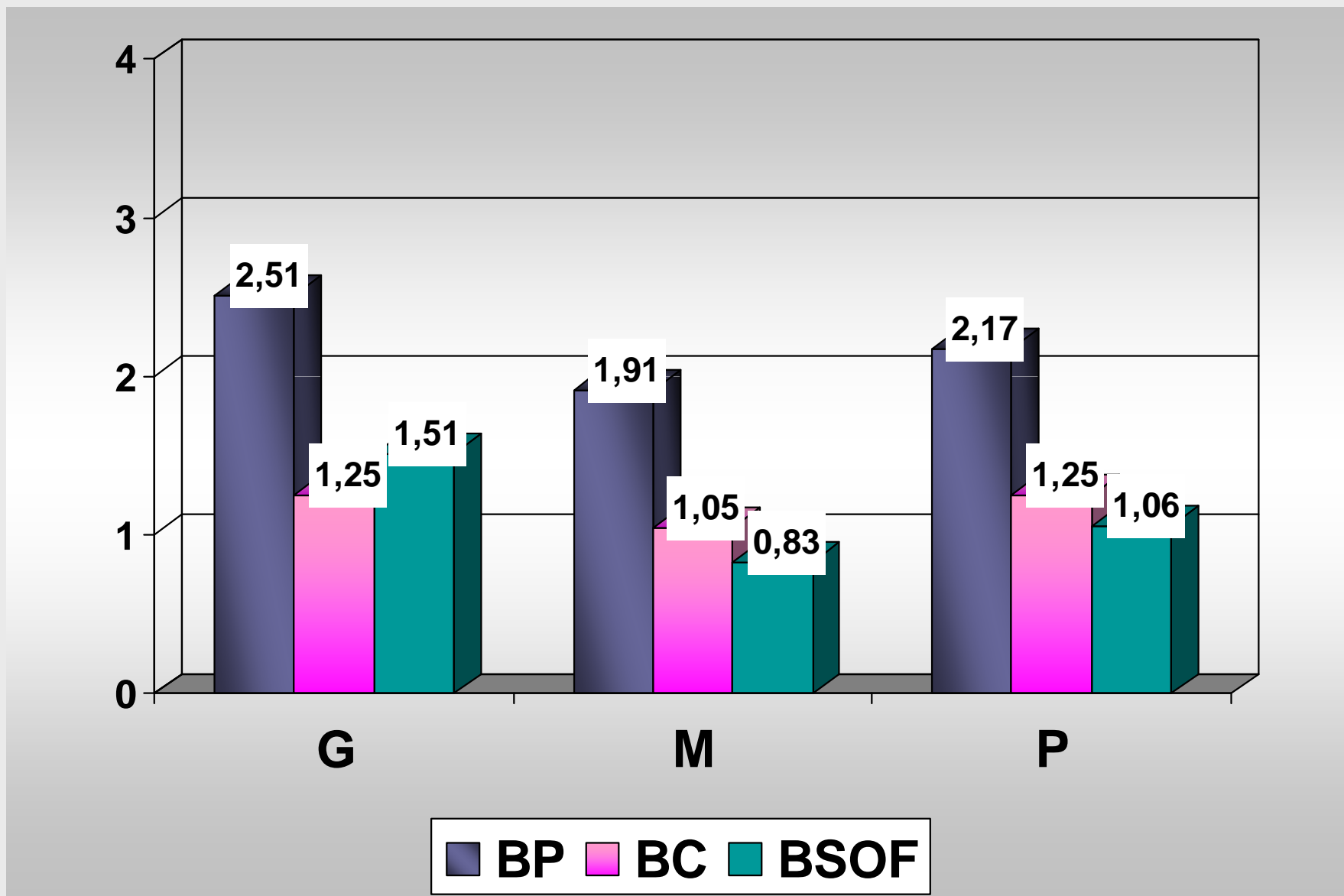
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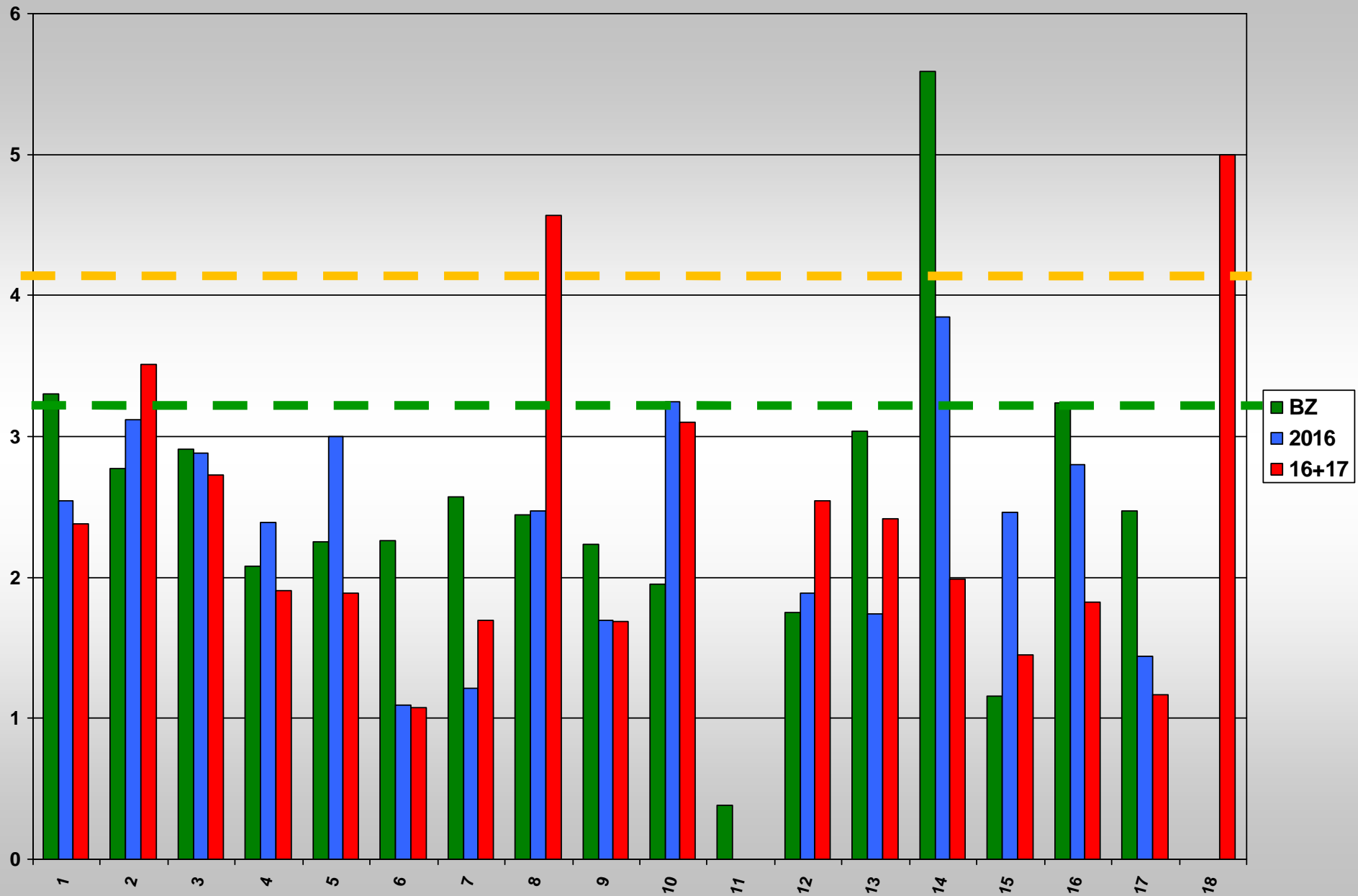




# TASAS BP, BC Y BSOF SEGÚN TAMAÑO DE HOSPITAL 2016

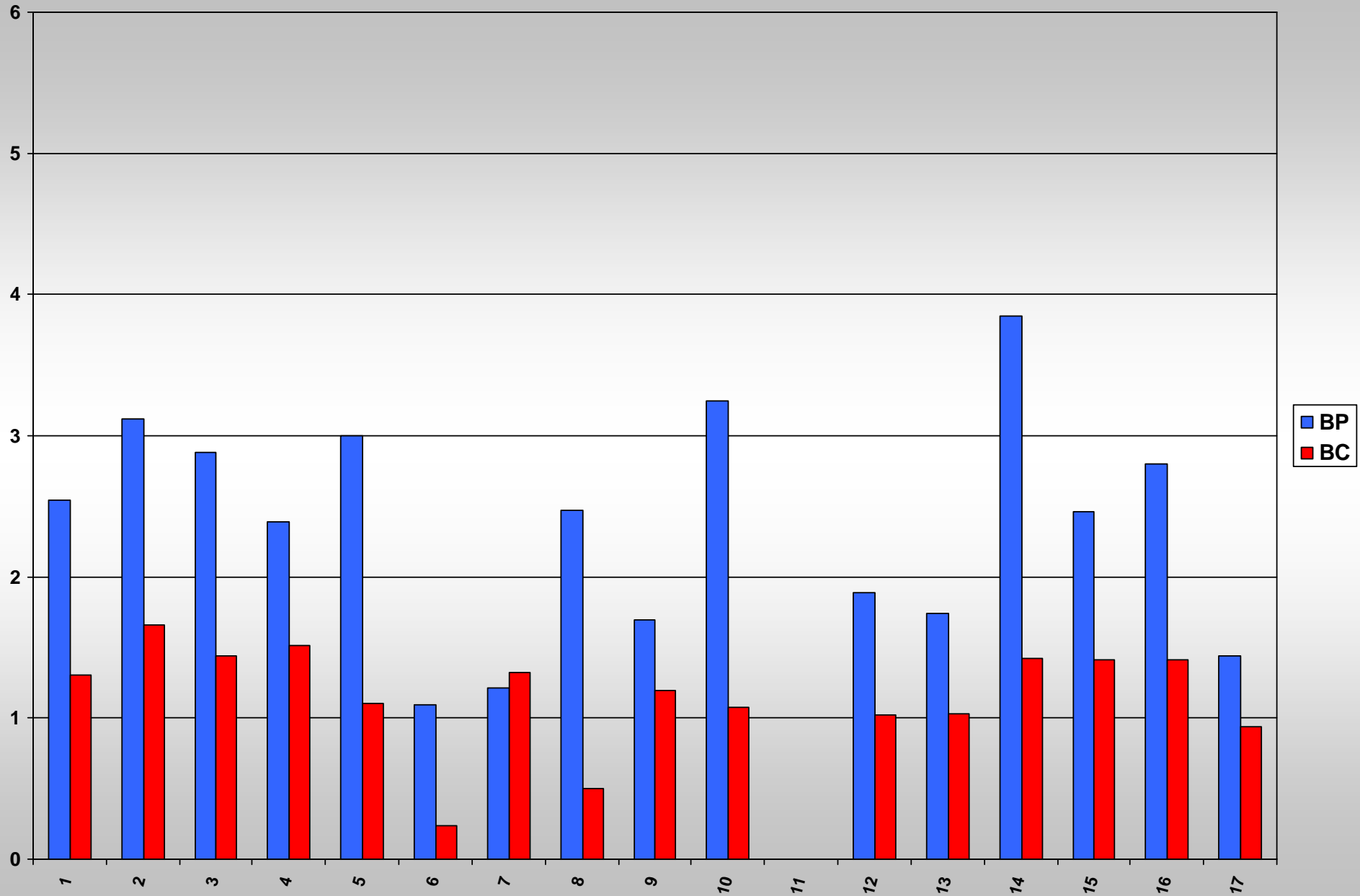


# DI BP x CCAA

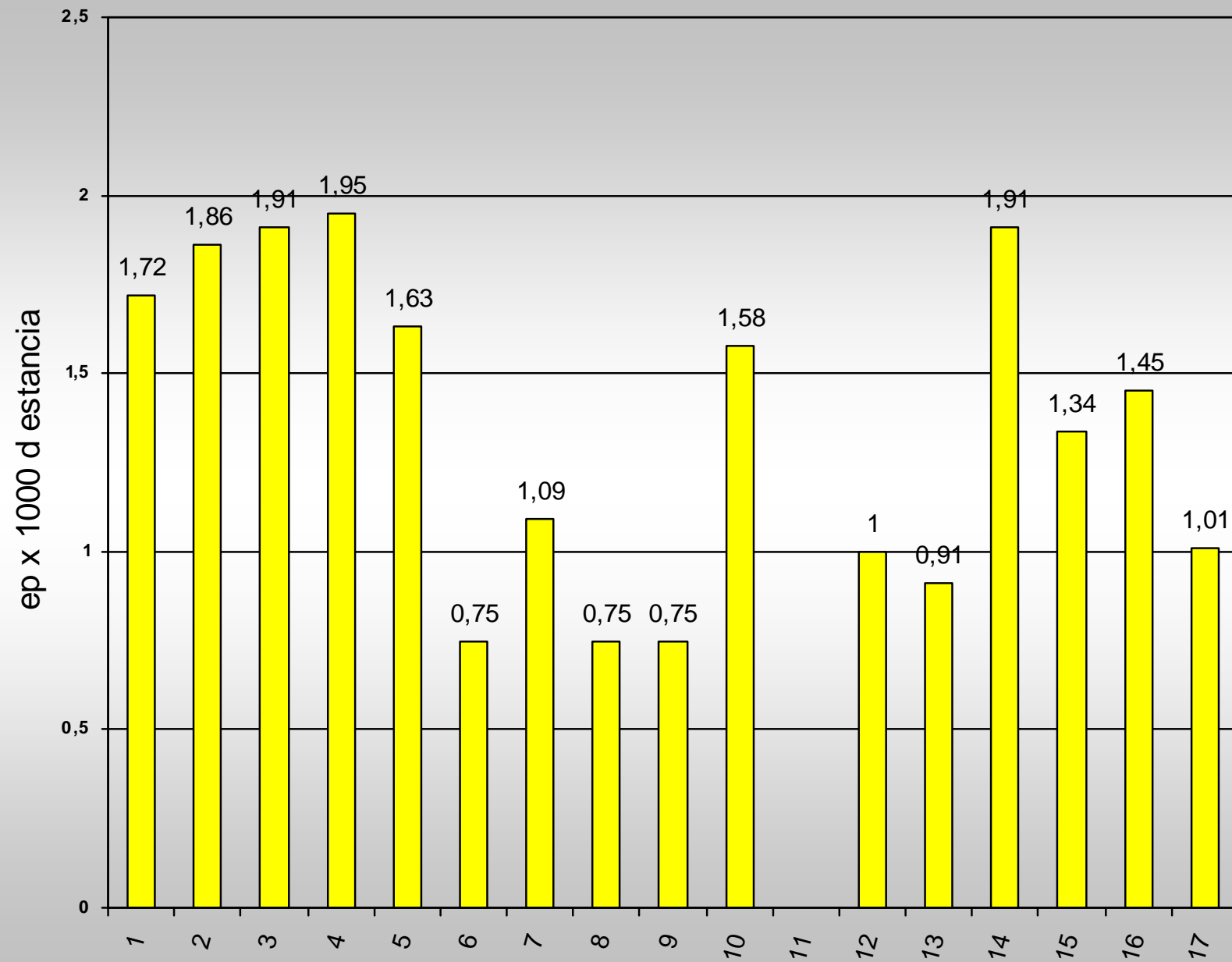




# DI BP Y BC x CCAA 2016



# DI **BSOF** x CCAA 2016

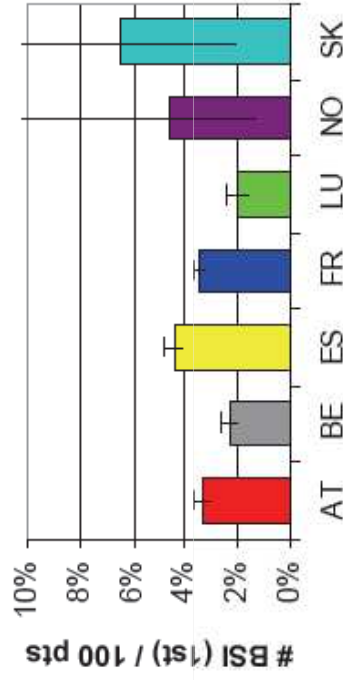


# Impact of risk-adjustment on inter-country comparisons of ICU infections indicators

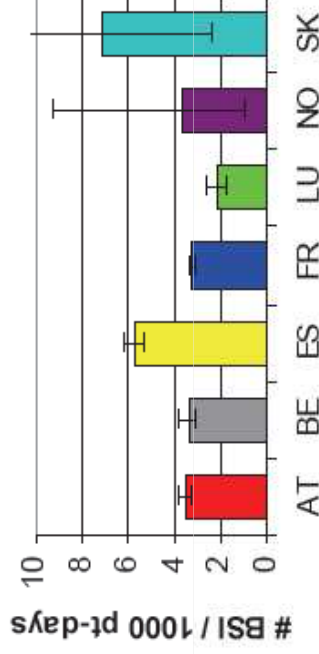
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**Figure 5-6: Inter-country comparisons of ICU-acquired bloodstream infections (BSI) and origin of reported BSI**

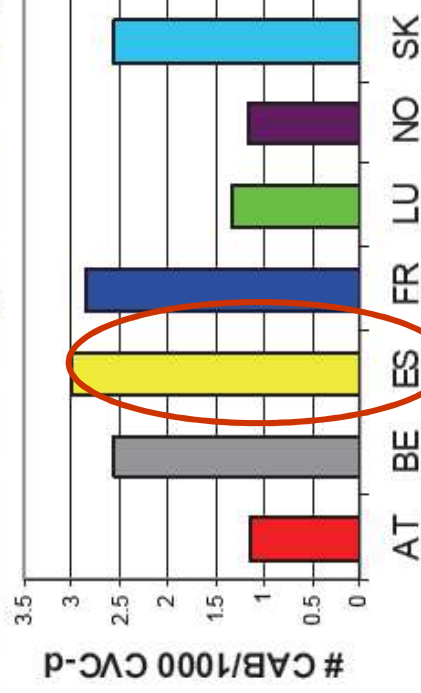
**BSI cumulative incidence (%)**



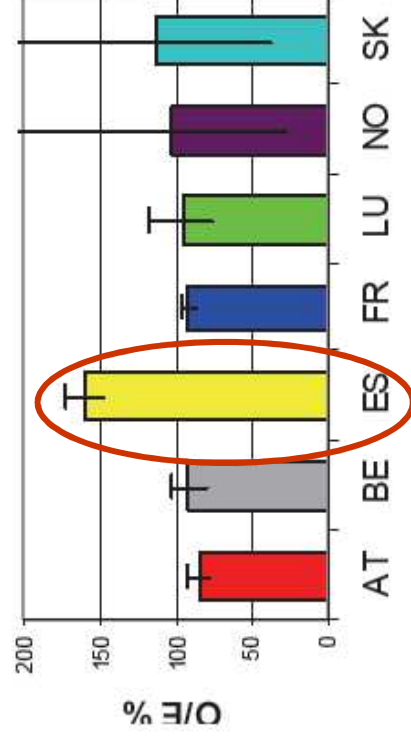
**Incidence density (/1000 pt-days)**



**Cath-ass. BSI rate (/1000 cvc days)**



**BSI standardized infection ratio (O/E)**



## Trends of the annual incidence rate of **primary BSI** (per 1000 patient days) in ICUs reporting at least 20 patients per country/network, 2008-2012

Country - Data source	2008	2009	2010	2011	2012	2008-2012	Trends, 2008-2012	Average annual change 2008-2012	p for trend
Czech Republic				5.8	5.2			-	n.a.
IT-SPIN-UTI	5.1	3.6	5.6	6.1	5.5			0.34	n.s.
Slovakia	5.8	5.6	5.6	2.8	3.0			-0.83	n.s.
Malta		6.7	3.9	2.3	0.6			-2.00	<0.001
UK-Scotland	5.2	4.3	3.4	2.6	1.9			-0.81	<0.001
Spain	3.9	3.3	2.6	2.7	2.5			-0.33	<0.001
Portugal	2.8	4.0	3.0	2.6	2.0			-0.28	<0.01
IT-GiViTI			2.8	2.2	2.5			-0.14	n.s.
<b>EU</b>	<b>2.7</b>	<b>2.7</b>	<b>2.5</b>	<b>2.5</b>	<b>2.3</b>			<b>-0.12</b>	<b>&lt;0.01</b>
Austria	2.5	2.2	2.9	2.4	2.2			-0.06	n.s.
Lithuania	1.7	3.7	2.7	1.6	2.0			-0.16	n.s.
Belgium	3.1	2.2	2.3	1.9	1.4			-0.37	<0.01
Estonia	0.8	0.6	4.1	3.3	1.6			0.44	<0.05
France	2.1	2.2	2.0	2.3	2.2			0.02	n.s.
Romania				0.6	1.8			-	n.a.
Luxembourg	1.3	1.2	1.3	1.1	1.1			-0.04	n.s.
Croatia	0.7							-	n.a.



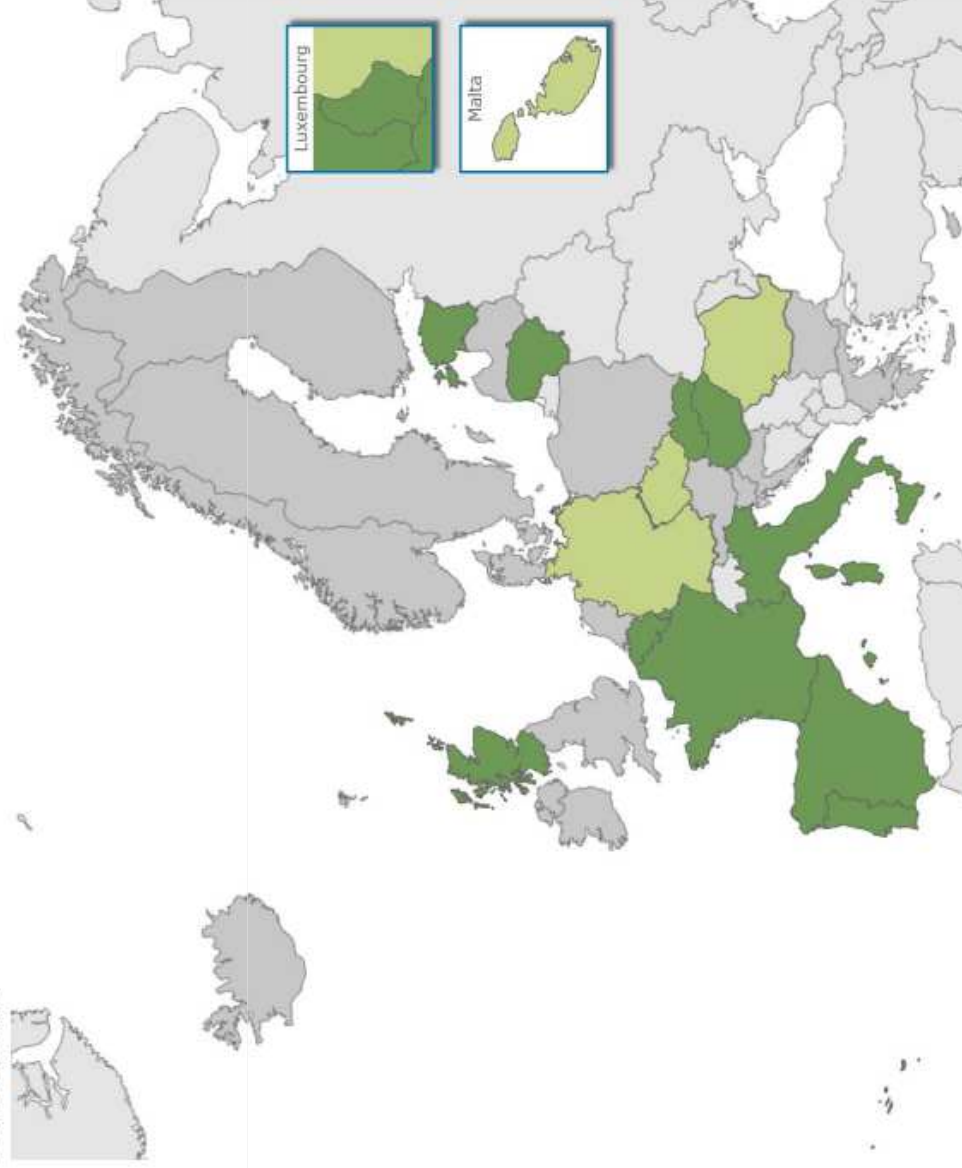
## SURVEILLANCE REPORT

Annual Epidemiological Report for 2015

# Healthcare-associated infections acquired in intensive care units



**Figure 1.** Participation in surveillance of healthcare-associated infections in intensive care units, EU/EEA, 2015





## Healthcare-associated infections acquired in intensive care units

### ICU-acquired bloodstream infections (BSIs)

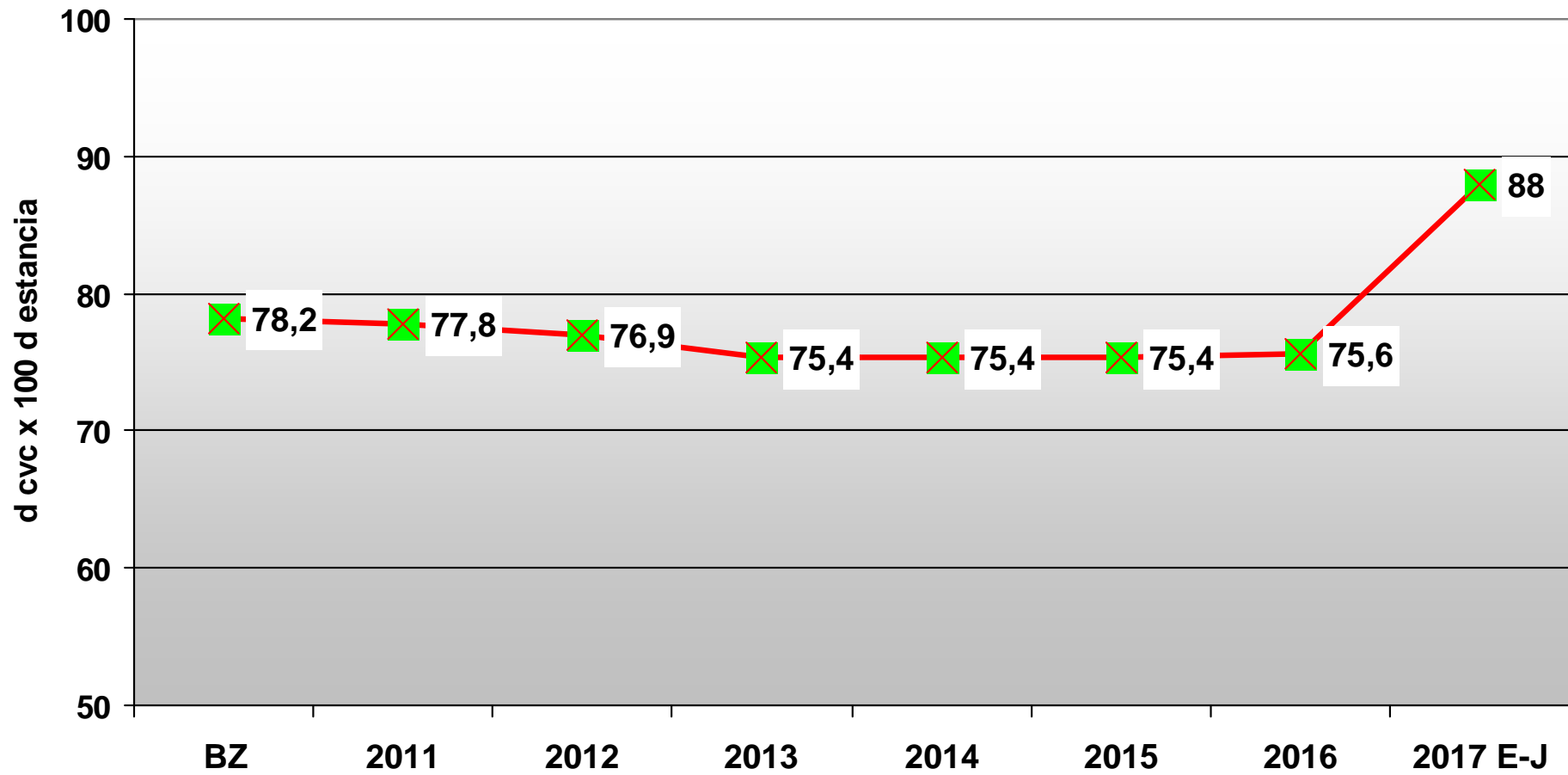
- A total of 5 360 cases of ICU-acquired BSI were reported.
- On average, ICU-acquired **BSIs occurred in 3.8% of patients** staying in an ICU for **more than two days**.
- The mean incidence density per ICU was **2.0 BSI episodes per 1000 patient-days** (ICU IQR: 0.4–3.1). (**BZ 2016: 2.9**)
- The respective mean incidence density of **primary BSIs** (including catheter related infections and infections of unknown origin) per ICU was **1.3 episodes per 1 000 patient-days** (ICU IQR: 0.1–2.1) (**BZ 2016: 1,73**)
- The 43% of BSI episodes were catheter related (**BZ 2016: 30%**)

- In patient-based surveillance, the central vascular catheter (CVC) utilisation rate was on average **70.5 CVC-days per 100 patient days**; it was the lowest (57.0) in Slovakia and the highest (83.0) in Estonia.

**Table 3. ICU-acquired central line-associated bloodstream infection (CLABSI) rates by country, EU/EEA, 2015**

Country/ Network	Number of ICUs	Number of patients	Average length of ICU stay (days)	CVC use (days per 100 patient days)	CLABSI rate (episodes per 1 000 catheter-days)			
					Country mean	25th percentile	Median	75th percentile
Belgium	8	1 370	9.1	76.6	1.8	1.3	1.9	2.4
Estonia	8	1 600	9.9	82.9	2.1	1.1	1.9	2.4
France	188	63 240	11.6	65.9	2.3	0.9	1.9	3.2
Hungary	12	1 497	9.8	65.2	6.0	2.1	3.9	6.7
Italy GIVITI	74	15 616	10.0	82.6	2.7	0.9	2.1	3.9
Italy SPIN-UTI	18	1 160	10.9	79.6	7.2	0.0	3.8	13.3
Lithuania	28	2 739	9.3	63.4	1.6	0.0	0.0	2.4
Luxembourg	8	2 788	9.5	62.1	1.4	0.9	1.5	2.2
Portugal	37	6 047	12.4	80.1	3.2	0.7	2.9	3.9
Slovakia	7	361	9.1	58.6	8.0	1.4	3.6	5.0
Spain	191	38 009	8.1	74.6	2.2	0.0	1.8	3.4
United Kingdom – Scotland	24	6 916	7.9	59.7	2.0	0.5	1.8	2.7

## BZ : UTILIZACIÓN CVC





**Table 3. ICU-acquired central line-associated bloodstream infection (CLABSI) rates by country, EU/EEA, 2015**

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Hungary	12	1 497	9.8	65.2	6.0	2.1	3.9	6.7
Italy GIMTI	74	15 616	10.0	82.6	2.7	0.9	2.1	3.9
Italy SPIN-UTI	18	1 160	10.9	79.6	7.2	0.0	3.8	13.3
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Portugal	37	6 047	12.4	80.1	3.2	0.7	2.9	3.9
Slovakia	7	361	9.1	58.6	8.0	1.4	3.6	5.0
Spain	191	38 009	8.1	74.6	2.2	0.0	1.8	3.4
United Kingdom – Scotland	24	6 916	7.9	59.7	2.0	0.5	1.8	2.7

En el 9º año de BZ.

En 2017 se han incrementado el nº de UCI enviando datos al programa (11 unidades). Tan solo 1 CA no participa en el registro.

Ha continuado el descenso de las tasas de BP en 2016 y 2017, un 30% respecto al periodo BZ. Descenso paralelo de las tasas de BC.

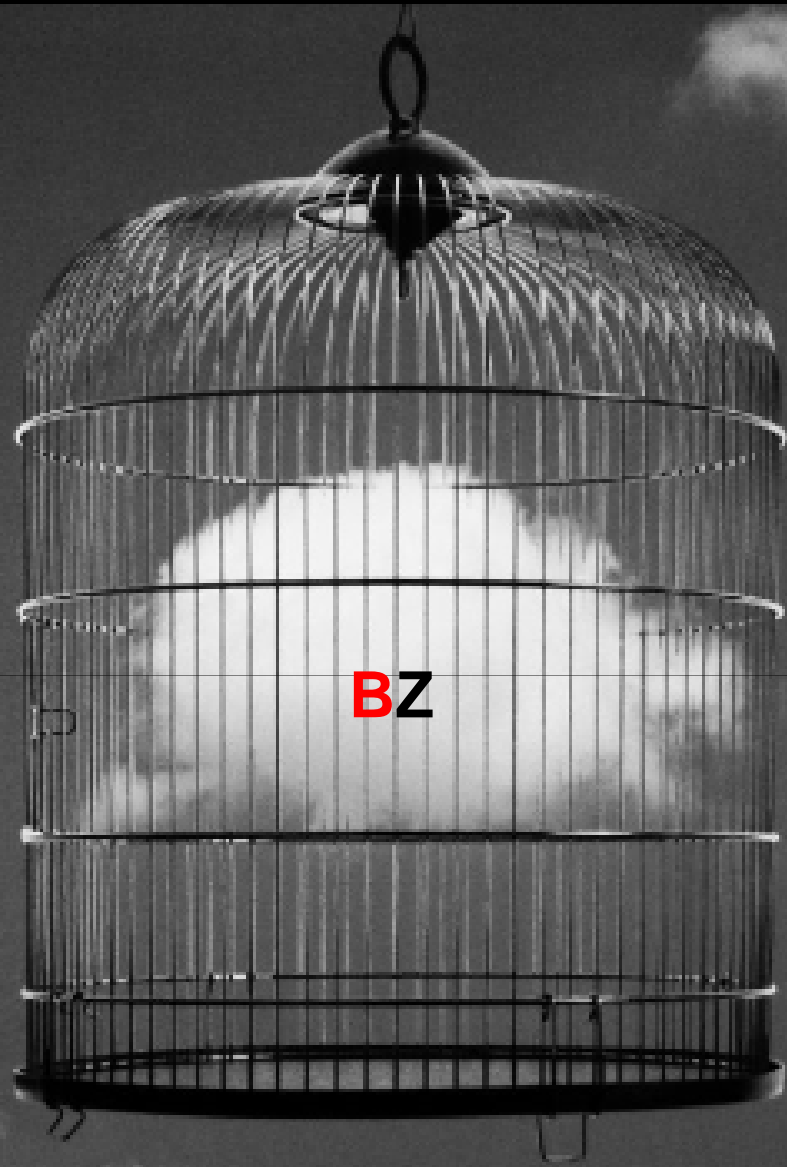
Variabilidad en las tasas en las diferentes CCAA. 2 CCAA superan los 4 episodios x 1000 d de CVC y en 11 CCAA las tasas son inferiores a 3 episodios x 1000 d de CVC.

Importante aportación a la base europea, tanto en nº de pacientes como en tasas.

Tasas elevadas y estables de utilización de CVC (mejorable)

A photograph of a long, straight road that stretches from the foreground into the distance, flanked on both sides by dense, vibrant pink cherry blossom trees. The road is paved and appears to lead towards a small cluster of buildings on a hill in the far distance under a clear, light blue sky. The overall scene is peaceful and scenic, symbolizing a journey or path.

**SIGAMOS EL CAMINO  
GRACIAS A TODOS POR EL ESFUERZO**



**BZ**