


**EUROPEAN**  
**HEALTHCARE DESIGN**  
RESEARCH • POLICY • PRACTICE



Case study  
HM Nuevo Belén  
Hospital, Madrid, Spain

[amueller@arquitecturadematernidades.com](mailto:amueller@arquitecturadematernidades.com)





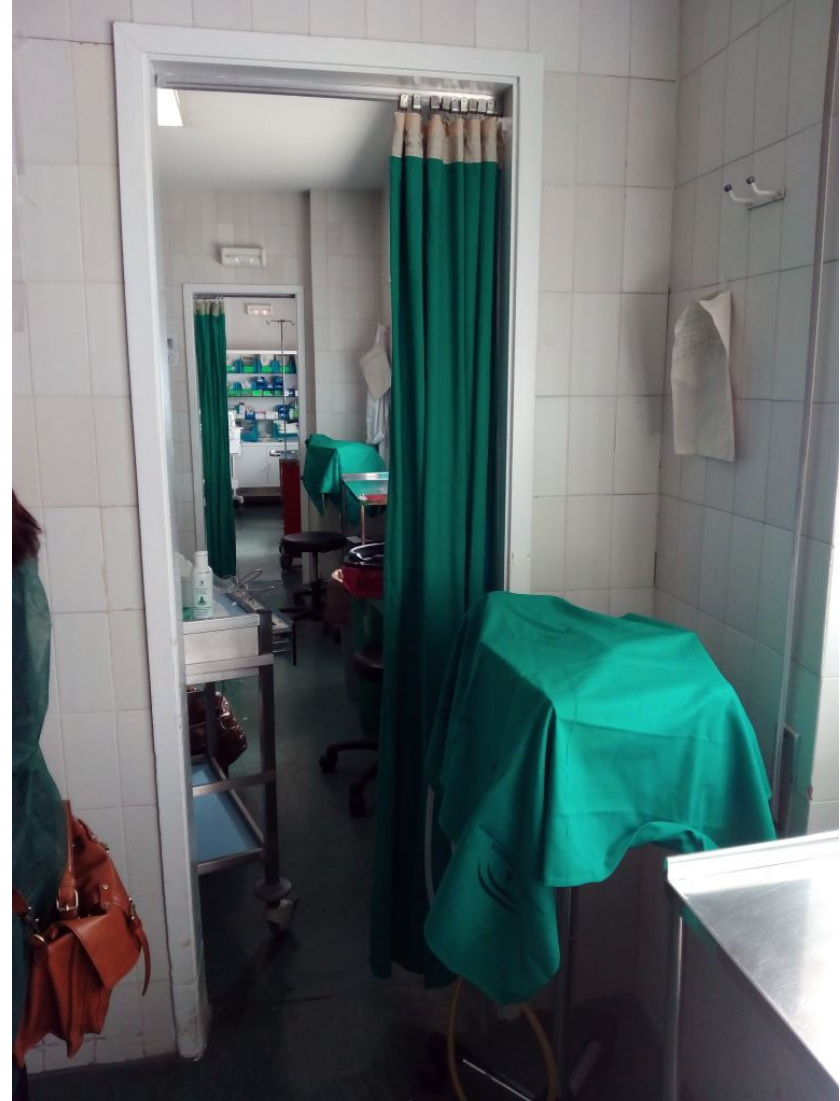
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Angela Müller & Marta Parra













## How can we as designers influence workflows? Architecture as a driving force for change





## The consequences of the traditional model:

- No privacy
- No free movement
- Loss of control
- High intervention rate:
  - Extremely high episiotomy rate
  - High c-section rate
  - High PTSD (Post traumatic stress disorder)



## **What makes obstetric patients so special?**

- **With a few exceptions, they are not medical cases**
- **In case they turn into a medical case, they are almost always awake, especially in the surgery room**
- **They are «2 in one» patients (& family)**



## 1999 EURO-PERISTAT:

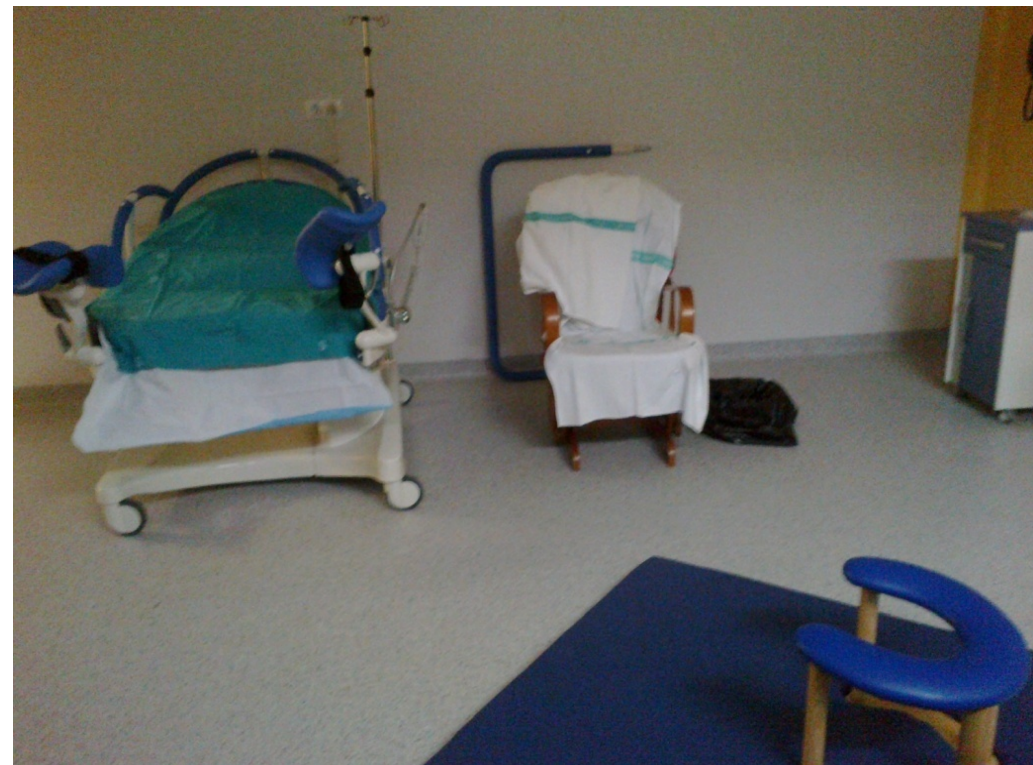
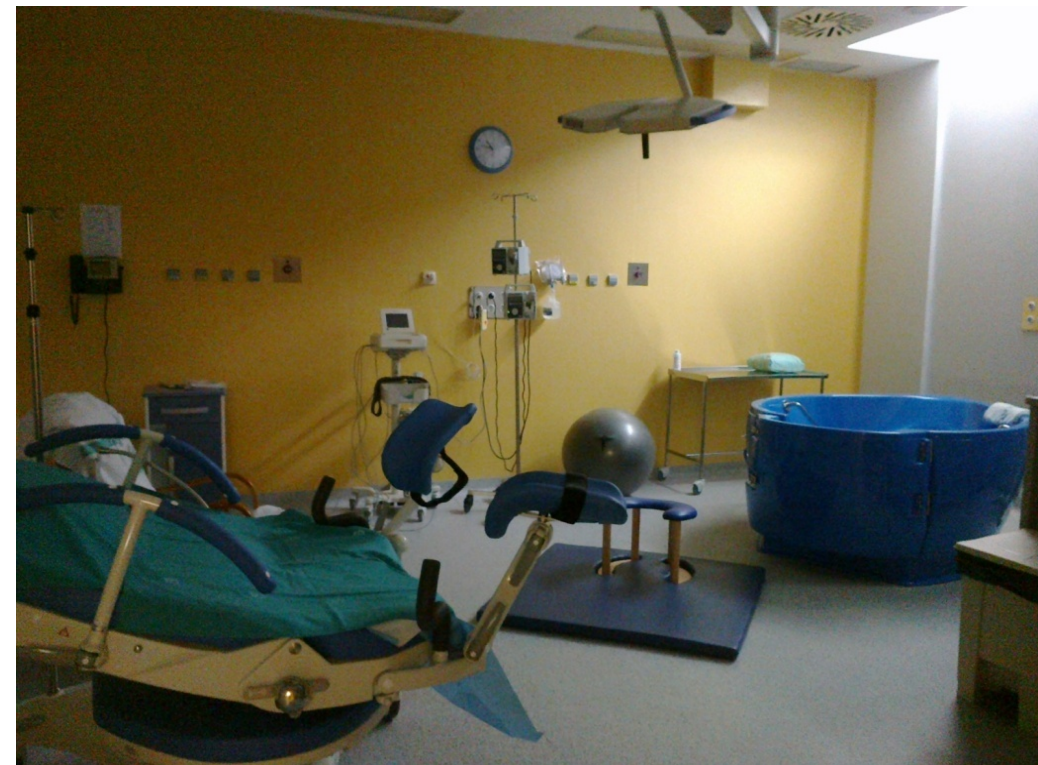
[www.euoperistat.com](http://www.euoperistat.com)

"The challenge of the twentieth century was to reduce mortality.  
-The challenge of this century is to reduce morbidity"

see European Perinatal Health Report 2010



## So what is happening in Spain?



## Birth room or Gym?





**The hospital**

**MORE BIRTHS  
=  
BETTER BIRTHS**





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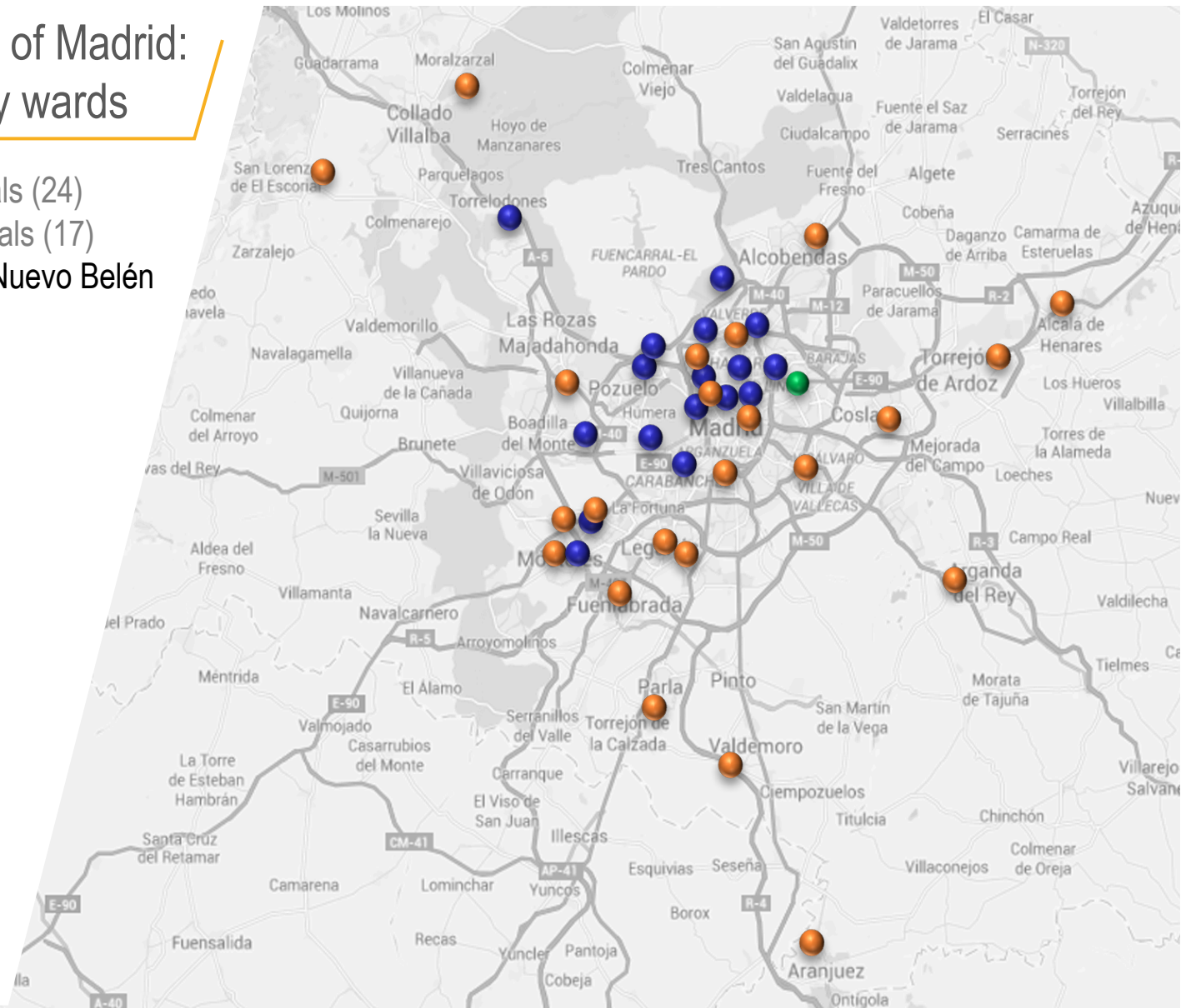


Privacy ?



# Municipality of Madrid: 41 Maternity wards

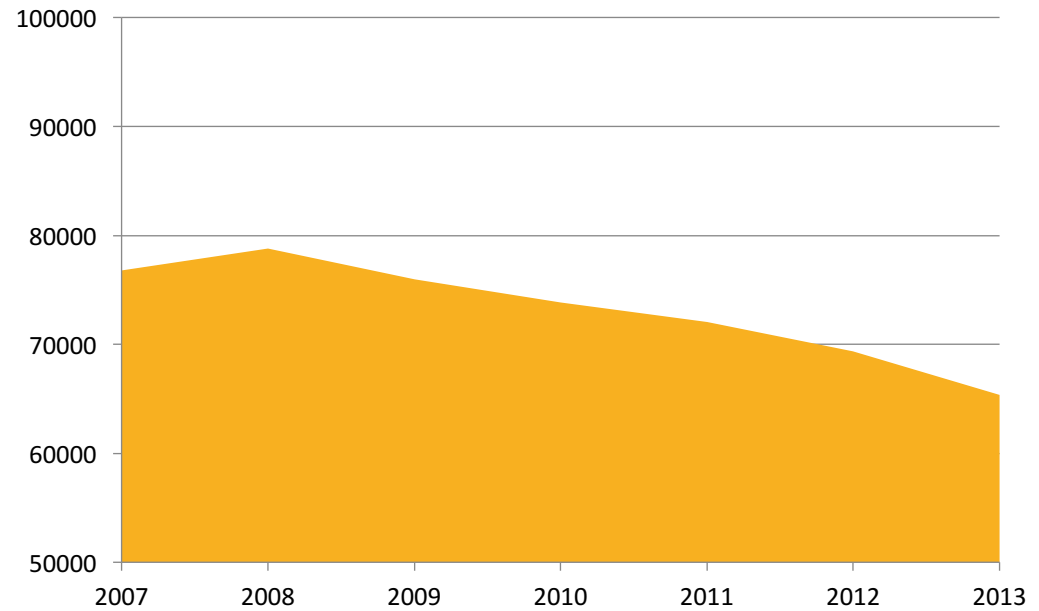
- Public hospitals (24)
- Private hospitals (17)
- Hospital HM Nuevo Belén





# Data on births Municipality of Madrid 2005-2015

2005: 69.367 birth  
2015: 46.852 births



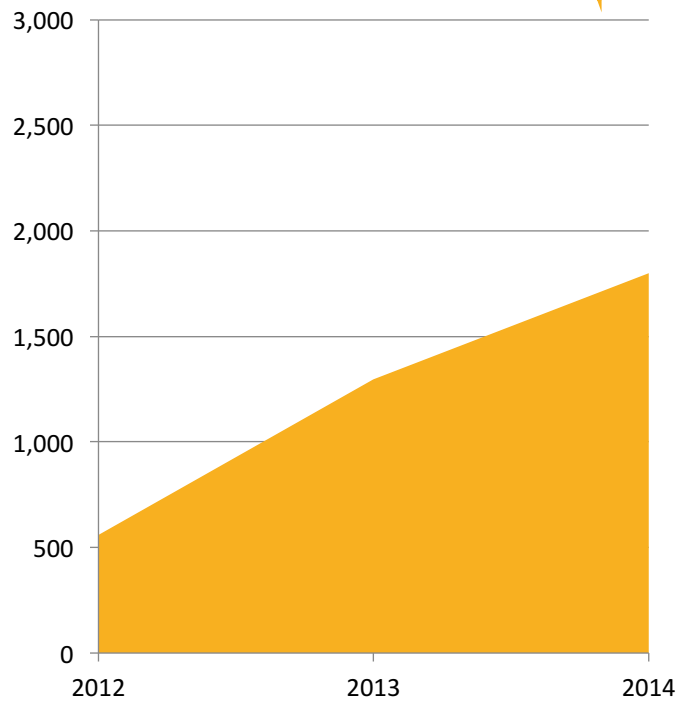
Fuente:  
<http://www.ine.es/jaxi/menu.do?type=pcaxis&path=/t20/e304/&file=inebase>



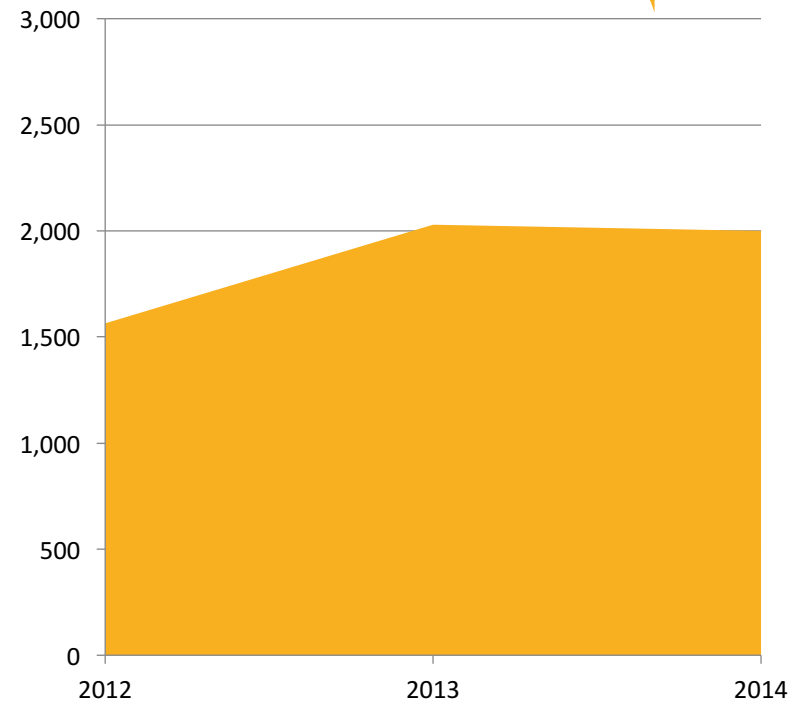
# Birth rates increasing

## In hospitals that changed their maternity ward and protocols:

Hospital Rey Juan Carlos  
(idc Salud)



Hospital de Torrejón (Sanitas)



Fuentes: Memorias y webs de cada hospital



## First intervention



## Improving the existing



## Before / after

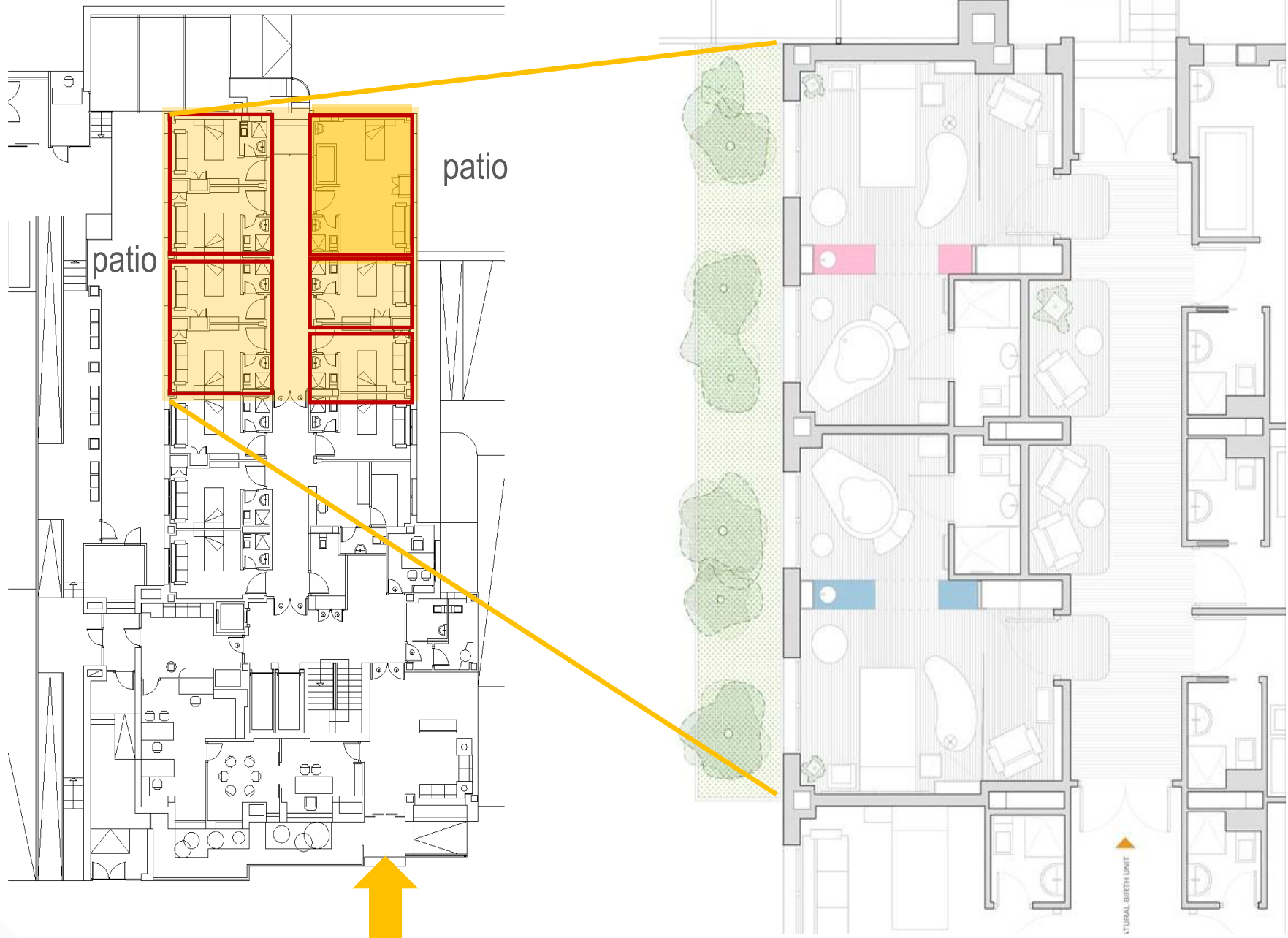


## EVIDENCED BASED DESIGN PUT INTO PRACTICE:

EBD Indicator		Actions
Peace & Quiet	Coice of location Soundproofing Easy wayfinding	Quiet zone No waiting rooms Natural light
Privacy	Birth without transfers	L&D-Room «All in one»
Security	Obstetric OR- ICU/ NICU Bloodbank 1:1 attention	➤ Shorten distances!
Free movement	Space	Functional furniture design Support materials
Partner	Spacial needs of a partner o accompanying person	Resting place inside and outside of the room
Alternative pain managment	Hot water as a natural analgesia Medical gases	Shower/ birth pool Kalinox etc.



# 1 aisle+ 8 small patient rooms = New Birth Unit







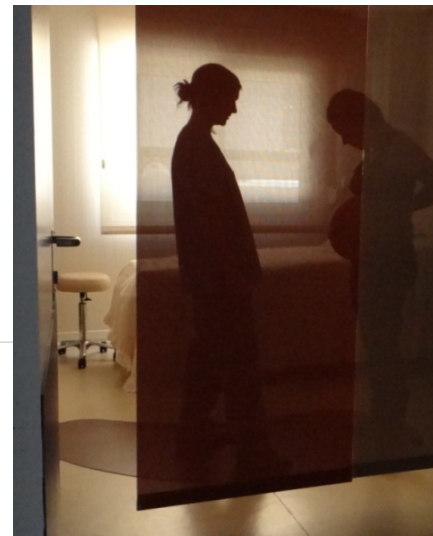
## ORIENTATION NATURAL LIGHT

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## PRIVACY COMFORT

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# BIRTH IN MOVEMENT

## FUNCTIONAL FURNITURE DESIGN



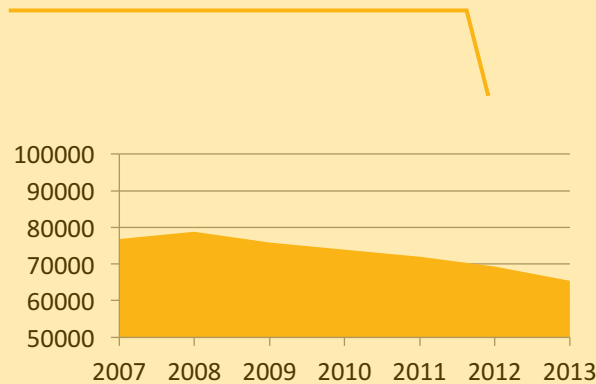
# MEDICAL EQUIPMENT OUT OF SIGHT- STRESS REDUCTION



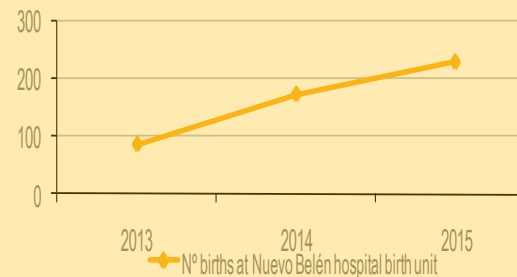
# EVALUATION OF THE PROJECT

## INCREASING ACTIVITY

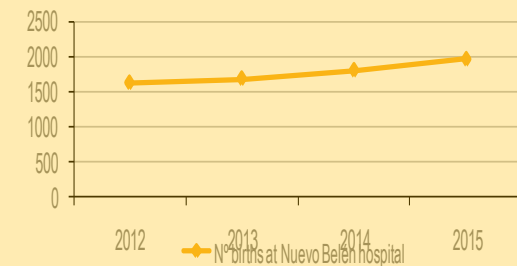
Evolution nº births  
Madrid region  
2007-2013



Evolution nº births  
New Birth Unit  
Nuevo Belén hospital  
2013-2015



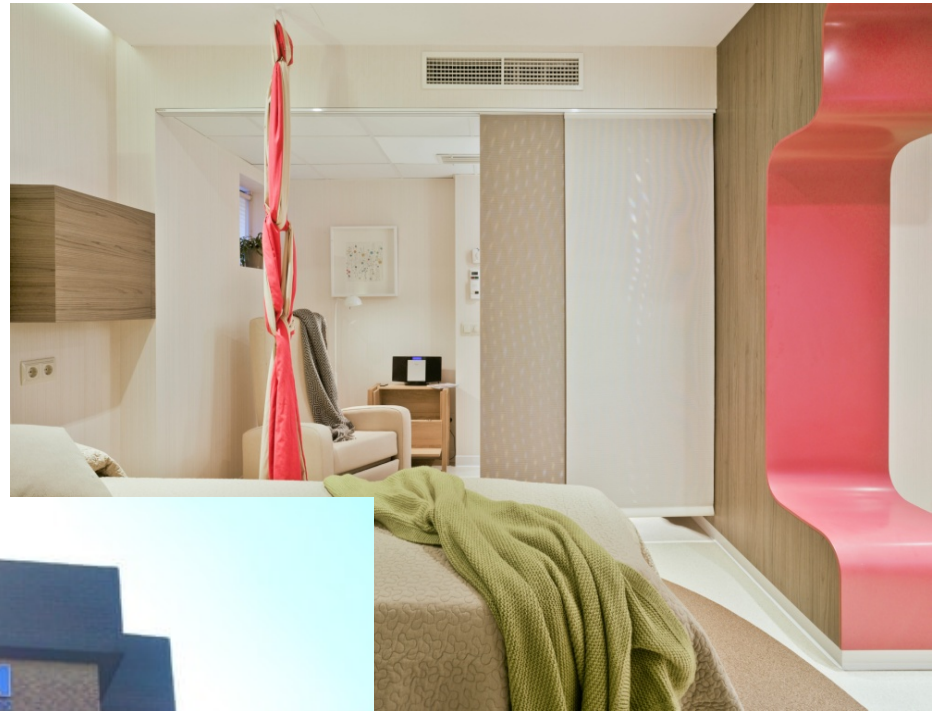
Evolution total nº births  
Nuevo Belén hospital  
2012-2015



- in just 2 years time, the births at the Birth Unit were 20% of the total nº of births in the hospital.
- Total number of births at the hospital increased



## 2 different birthrooms = 2 different ways of attention



## 2 different birthrooms = 2 different ways of attention



# EVALUATION OF THE PROJECT

Indicators	Birth Unit Nuevo Belén	% national (2010) Ministry of Health	Recommendation Ministry of Health
Programmed obstetric activitiy	20%	Ca. 30%	< 10%
c-section rate (OMS: máx.15%)	11%	22% public 35% private	Máx. 15%
% Epidurals	39%	72%	< 50%
Water birth	11%	-	-
VBAC (Vaginal birth after c-section)	80%	44,2%	60-80%





## SIDE EFFECTS

	Birth Unit	Hospital	
<b>Programmed obstetric activity</b>	20%	2013: 34.8% 2016: 27.6%	↓
<b>C-section rate</b> (WHO: máx.15%)	11%	2014: 38% 2015: 34%	↓
<b>Episiotomy</b> (WHO: máx.10%)	< 5%	>90% >...going down	↓



## High-class & low-cost





[www.arquitecturadematernidades.es](http://www.arquitecturadematernidades.es)  
[amueller@arquitecturadematernidades.com](mailto:amueller@arquitecturadematernidades.com)

