Ways and means of reducing caesarean deliveries

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Outline

1. Is there a « desirable » rate?
2. Good reasons for non containment
3. Good reasons to avoid « unnecessary » CSs
4. More about variation / determinants of rates
5. « Ways and means »
6. Getting closer to « unnecessary »
   1. Robson
   2. Coulm
7. Conclusion: why is this relevant to EURO-Peristat's future ?

1. Is there a desirable rate?

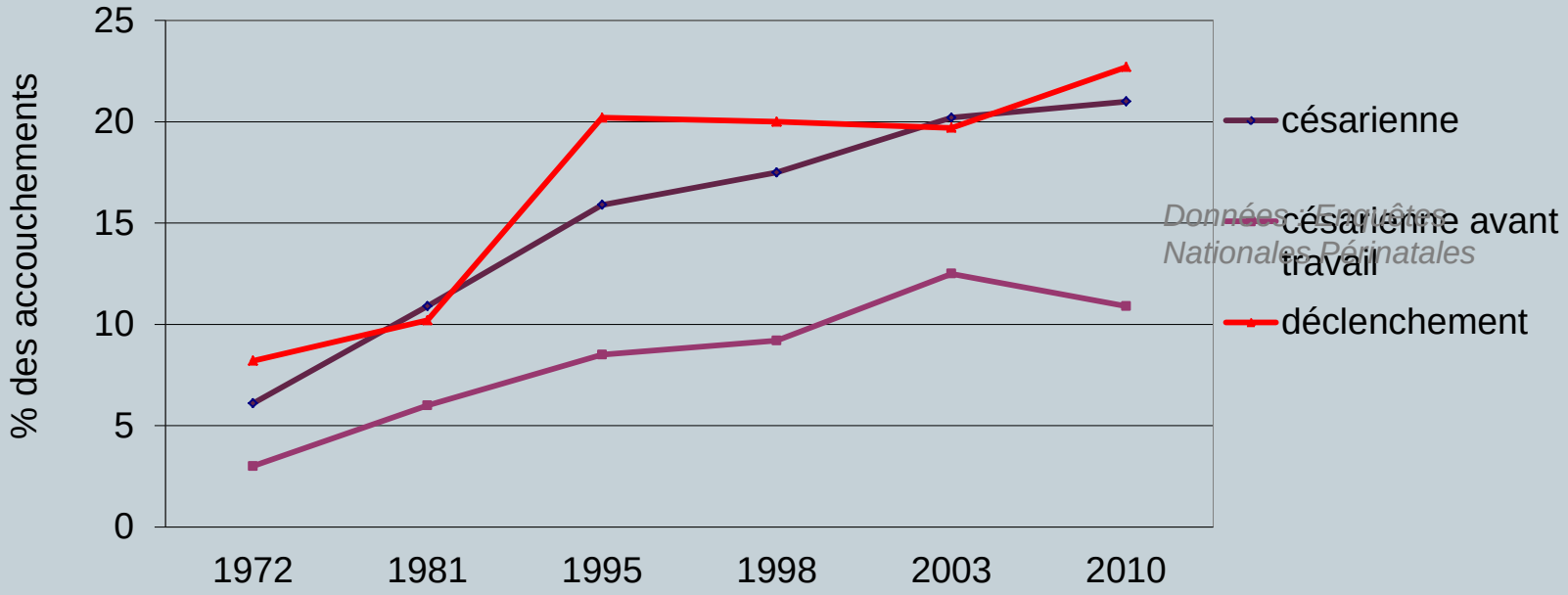
After the CS
Source Sewell
CS in 1822

1.1. WHO's < 15%

- Below 5%, maternal mortality increases
- 1985: WHO (empirically) recommends 10-15%, Lancet 1985);
- 1985 – 2014 clinicians and scientists, challenge this threshold as non realistic
- 2014 study in Birth (Ye et al) suggests that after adjusting for socio-economic parameters, 15% may well be appropriate.

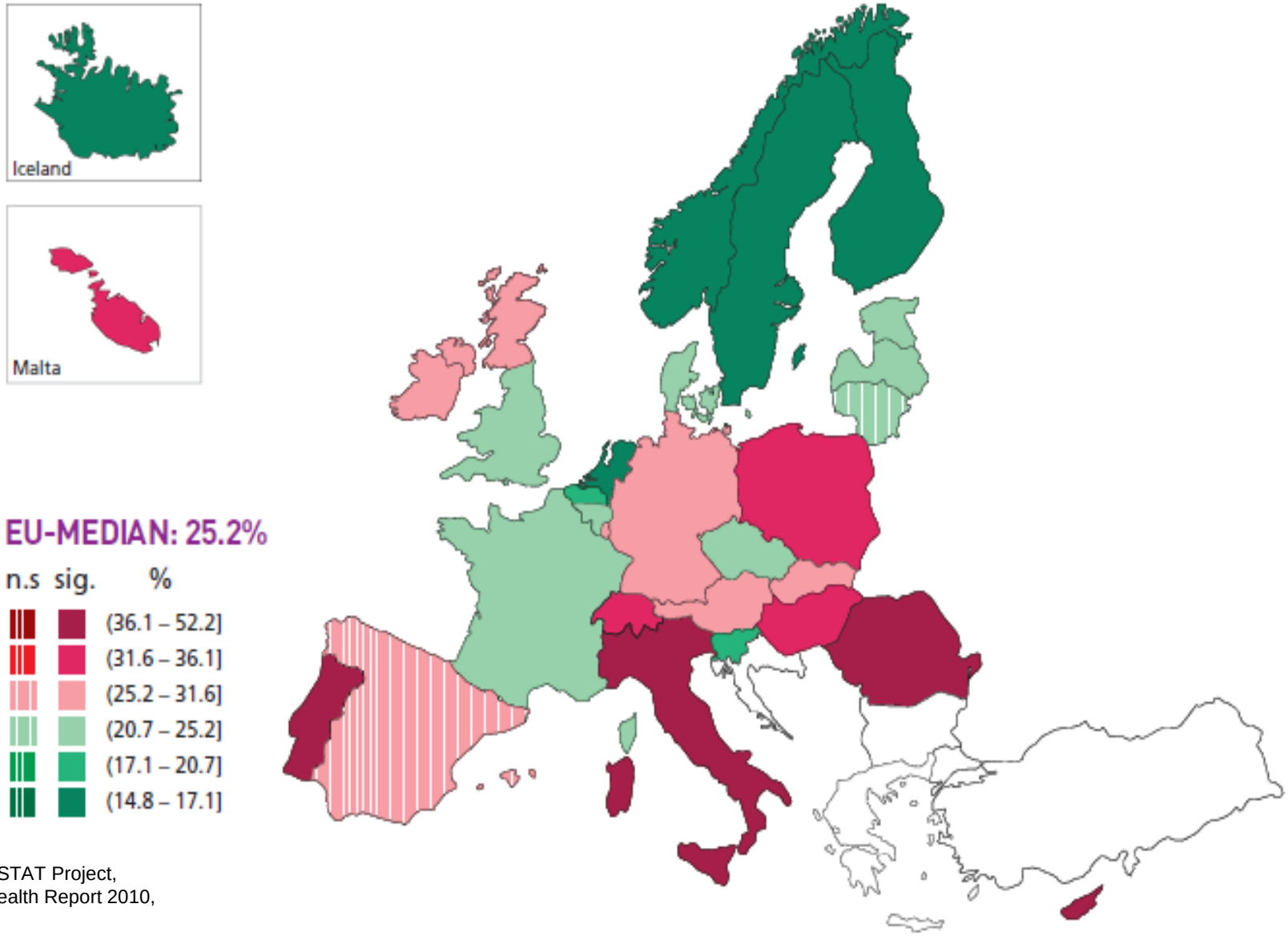
1.2. Upwardly mobile & mindboggling differences

- Ex: France
  - Source French Perinatal Surveys



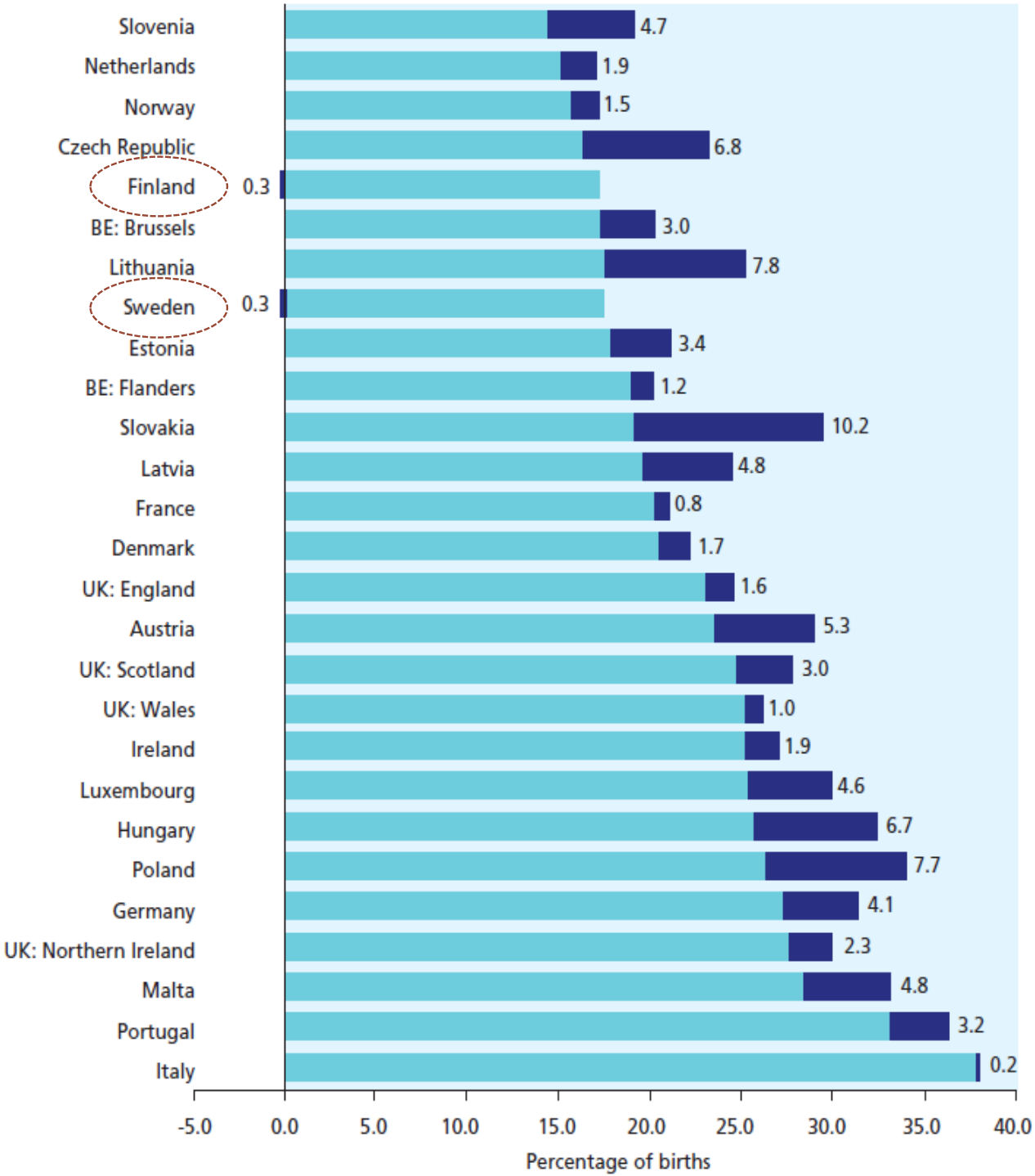
Europe

Caesareans as a percentage of all births in 2010



Source : EURO-PERISTAT Project, European Perinatal Health Report 2010, 2012.

Percentage of births by caesarean section in 2004 and change 2004-2010



Rate in 2004

Difference between 2010 and 2004

NOTE: Countries ordered by percentage of caesareans in 2004.

☞ Desirable rate?

- In Europe, countries with rates below 20% have among the best perinatal outcomes

2. Good reasons for non containment

Evidence (or controversy about the following benefits

- Change in pattern of CP (less spastic diplegic) (Badawi et al and more)
- Less perineal trauma
- Woman's choice

3. Good reasons to avoid « unnecessary » CSs

Short term

- Increased maternal morbidity and mortality in « non necessary » CSs
  - ***AdjOR 5,93*** *for unindicated antepartum CS (WHO Global Survey LMICs ; Souza et al 2010)*
- Increased neonatal mortality in non risk pregnancies
  - *MNN* ***1,77 ‰ in CS and 0,62*** *‰ in VB (Etats-Unis;Macdorman et al. 2006)*
- *Increased neonatal respiratory distress*

Long term (woman and next pregnancy)

- Increased menorrhagia

- Next pregnancy
  - Acreta
  - Cervical ectopic
  - All maternal morbidities
  - Uterine rupture

  - Stillbirth (conflicting data)

Long term impact on children and adults born by CS

- Significant increase (see all papers by Modi and team)
  - Asthma + 20% (meta-analysis, Thavagnanam et al. 2008)
  - Atopic disease + 23-32%
  - Type I diabetes + 23% (meta-analysis, Carwell et al. 2008)
  - Overweight & obesity+ 26% in childhood (meta-analysis Damascene 2014), + 20% in adulthood (Nordic BR, 2013)

To strike a balance: NNTs

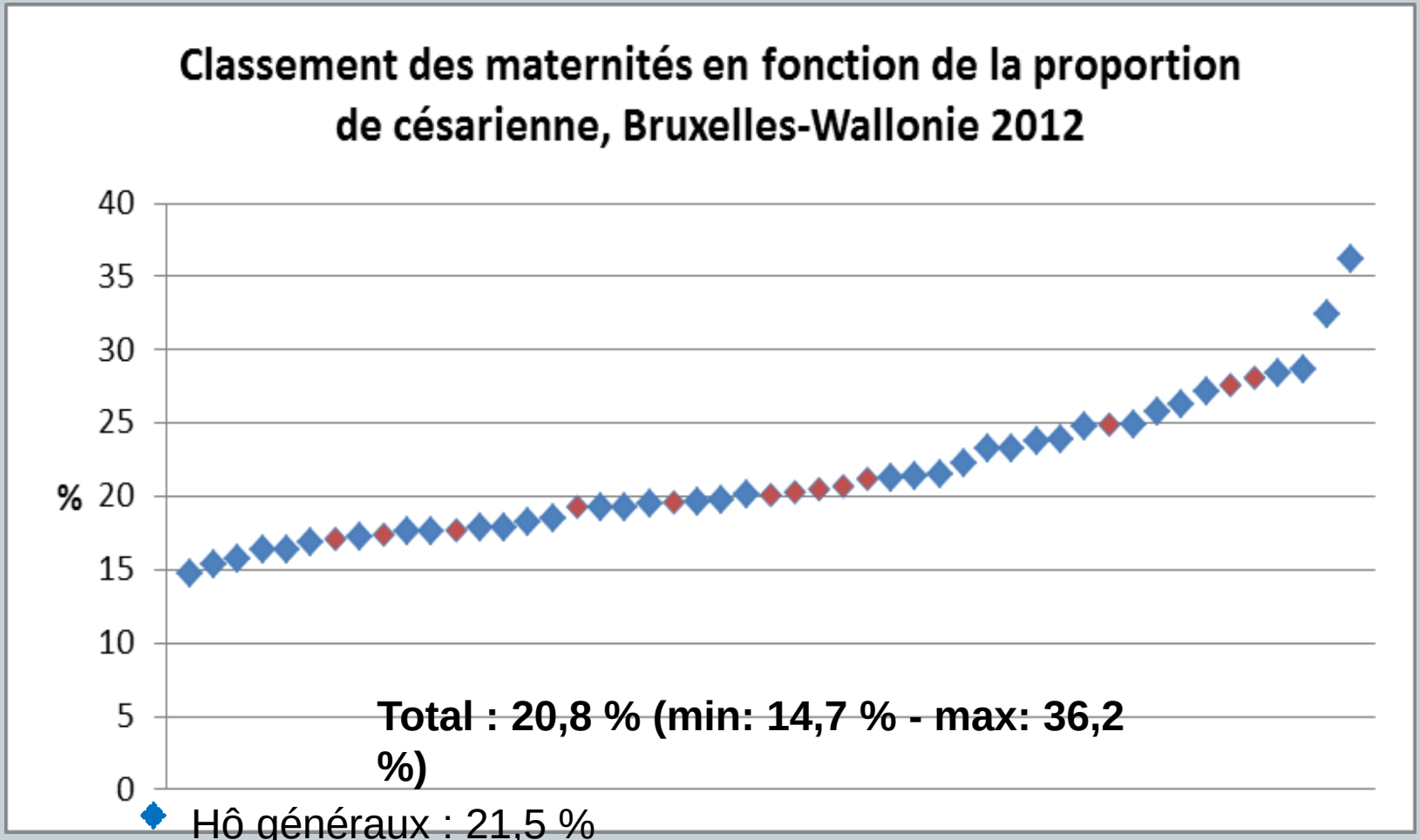
- Probably, outside clear indication, the clinician should ask the woman: « Would you rather:
  - avoid an increased risk of one in a hundred thousand of CP
  - or avoid an increased risk of one in twenty of asthma / childhood diabetes for you unborn child?

4. More about variation / determinants of rates

Leg Grasping

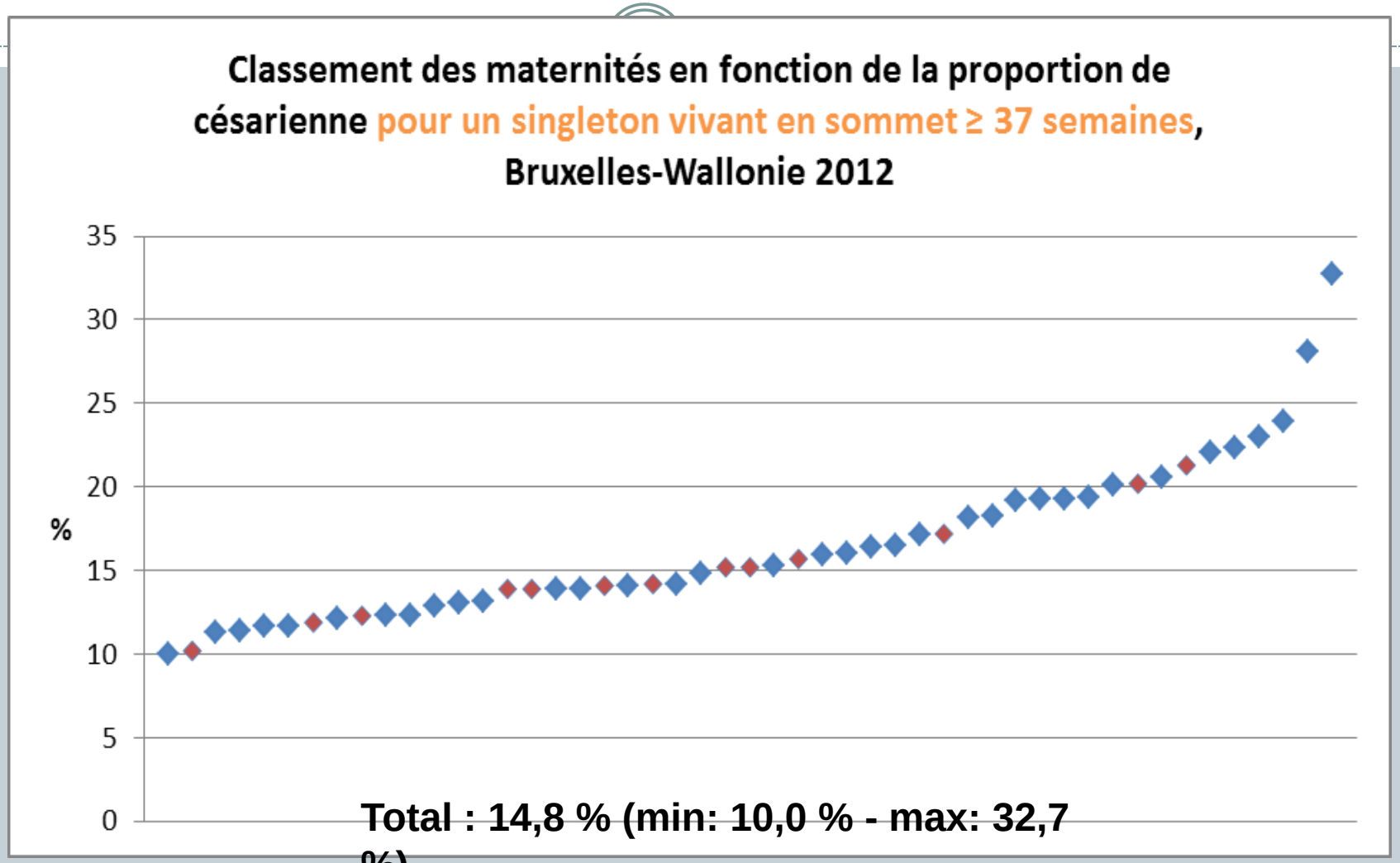
http://catalogue.museogalileo.it/indepth/PresentationFetus.html

Belgium CS rates by maternity unit



- Hô généraux : 21,5 %
- Hô universitaires et/ou NIC : 21,1 %

Same, restricted to term-singleton-vertex

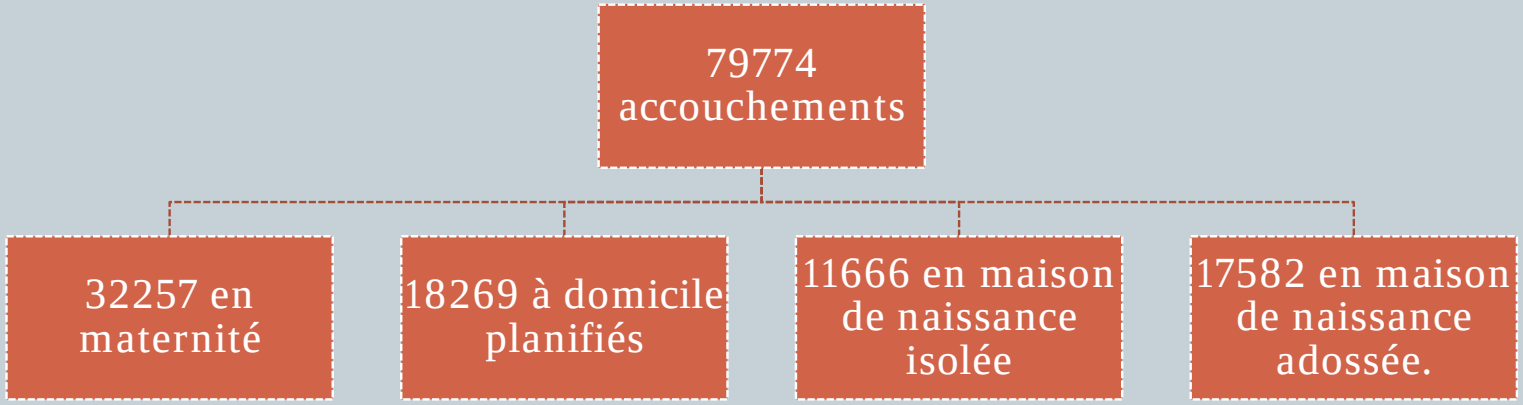


Total : 14,8 % (min: 10,0 % - max: 32,7 %)

- Hô généraux : 17,1 %
- Hô universitaires et/ou NIC : 14,6 %

Birthplace UK

- 2007: stratified sample of OU + all MU (along-side or stand-alone) + all home births



Birthplace

Mode of birth for 'low risk' women by planned place of birth

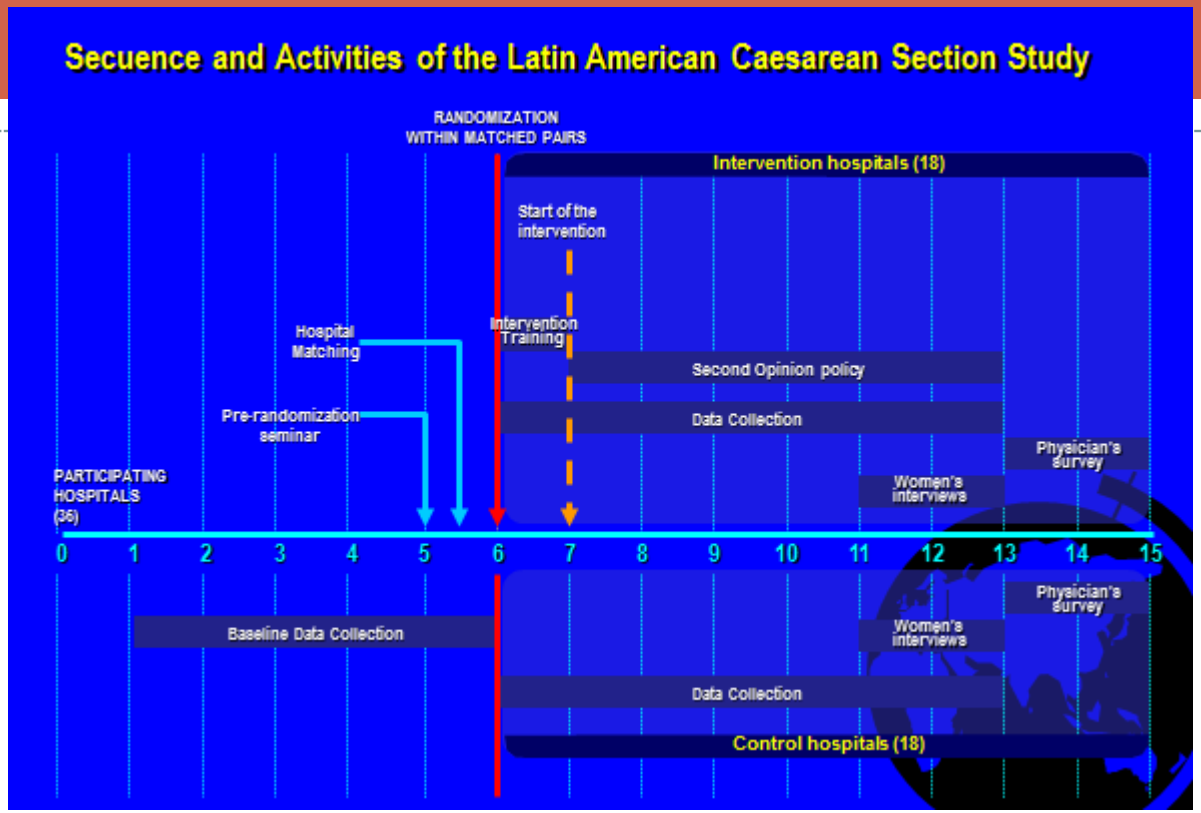
	Events	Births	Weighted		Adjusted	
	n	n	%	(99% CI)	OR	(99% CI)
Spontaneous vertex birth					n=62592	
OU	14645	19688	73.8	(71.1-76.4)	1	-
Home	15590	16825	92.8	(91.7-93.7)	3.61	(2.97-4.38)
FMU	10150	11280	90.7	(89.1-92.0)	3.38	(2.70-4.25)
AMU	14413	16690	85.9	(83.7-87.9)	2.22	(1.76-2.81)
Total	54798	64483	76.4	(73.8-78.7)		
Forceps delivery					n=62592	
OU	1307	19688	6.8	(5.4-8.4)	1	-
Home	372	16825	2.1	(1.8-2.5)	0.43	(0.32-0.57)
FMU	365	11280	2.9	(2.3-3.7)	0.45	(0.32-0.63)
AMU	769	16690	4.7	(3.5-6.4)	0.70	(0.46-1.05)
Total	2813	64483	6.2	(5.1-7.6)		
Intrapartum caesarean section					n=62592	
OU	2158	19688	11.1	(9.5-13.0)	1	-
Home	458	16825	2.8	(2.3-3.4)	0.31	(0.23-0.41)
FMU	405	11280	3.5	(2.8-4.2)	0.32	(0.24-0.42)
AMU	727	16690	4.4	(3.5-5.5)	0.39	(0.29-0.53)
Total	3748	64483	9.9	(8.4-11.5)		

Birthplace in England Research Programme

Possibly the main determinant

- Is HUMAN
  - How many CS without trial of labour in twins, IUGR, post-term, cord anomalies etc.?
  - How fast do you go for a CS in labour?
  - Do you VBAC or not?
  - Do you consider planned vaginal breech or not?
  - Do you believe in an added value on VB?

5. « Ways and means »



3 kinds of interventions have been tested in RCTs

- On patients: 7RCTs of which 4 with $p<0.05$
  - Relaxation, preparation, information
- On care-givers: 12 RCTs – of which the Latin American 2nd opinion 8 with $p<0.05$
- On finance (reimbursement): 2 RCTs – none of which worked

« CS-decreasing-interventions»

- Non clinical interventions « work », but may be unnecessary if clinical practice is appropriate?

- But clinicians (MW / Ob-Gyns) are not, all, always, very good at deciding on valid CS indications
  - Robson
  - Coulm

6. Getting closer to « unnecessary »

Robson

- 10 categories
  - Easy application including on routine data
  - Helps to point to
    - Necessary (e.g. transverse lie should be 100%)
    - Potential for improvement e.g. previous CS

Bruxelles-Wallonie - 2009-2012 (N=231 034)				
Catégories de Robson		**Taille relative des groupes (%)**	**Taux de césariennes dans chaque groupe (%)**	**Contribution de chaque groupe dans le taux global de césarienne (%)**
1	Nullipare, unique céphalique, ≥ 37 semaines, travail spontané	**23,6**	9,1	2,1
2	Nullipare, unique céphalique, ≥ 37 semaines, travail induit ou césa élective	14,6	26,3	**3,8**
3	Multipare, unique céphalique, ≥ 37 semaines, travail spontané, sans antécédent de césarienne	**25,7**	1,9	0,5
4	Multipare, unique céphalique, ≥ 37 semaines, travail induit ou césa élective, sans antécédent de césarienne	14,8	5,7	0,8
5	Multipare, unique céphalique, ≥ 37 semaines, antécédent de césarienne	9,1	61,9	**5,6**
6	Nullipare, unique siège	2,4	94,7	2,3
7	Multipare, unique siège	2,0	84,3	1,7
8	Toutes les grossesses multiples	1,9	59,0	1,1
9	Toutes les présentations transverse, unique	0,4	99,5	0,3
10	Toutes les grossesses uniques en sommet, < 37 semaines	5,5	29,1	1,6

Coulm

- Novel approach

- Estimate of « pre-labour non necessary CS »
- Panel decided on homogenous classification for either
  - No medical indication
  - Not in agreement with French guidelines
- Data base: Enquête Nationale Périnatale 2010
  - Published AOGS 2014

Women in survey (n = 14 681)

Prelabour CS (n=1593)

10,9%

Indications

Determinants

28 « potentially avoidable » situations defined by pannel

Potentially avoidable (n = 446)

28%

≥ 37 SA et l'une des situations suivantes sans autre facteur obstétrical défavorable [1]

83%

-Utérus unicicatriciel
-Présentation du siège
-Gémellaire, J1 céphalique
-Suspicion de disproportion fœto-pelvienne
-Age gestationnel ≥ 41 SA
-Antécédent de mort-fœtale in utéro
-Demande maternelle, en l'absence de complication

Unavoidable

(n = 1 140)

[1] Antécédent de césarienne ou de MFIU, âge gestationnel 37< ou ≥ 41 SA, RPM, présentation non céphalique, grossesse multiple, suspicion de disproportion fœto-pelvienne, pathologie maternelle, anomalie de la vitalité fœtale.

Determinants (multiparae)

	Césariennes potentiellement évitables	Tentatives de voie basse			
	%		p	ORa*	95% CI
	(N=236)	(N=6779)			
Age					
< 25	6,4	8,8	0,01	0,9	0,5-1,6
25-34	60,2	66,7		1	
≥ 35	33,5	24,5		1,6	1,1-2,1
BMI					
< 25	62,1	71,2	$<10^{-4}$	1	
25-29	15,2	18,5		1,0	0,6-1,4
≥ 30	22,8	10,3		2,7	1,9-3,8
More than recomended AN visits					
Yes	13,4	9,4	0,05	1,5	1,0-2,3
No	86,6	90,6		1	

OR ajustés sur l'âge maternel, l'IMC, l'assistance médicale à la procréation, la surveillance prénatale intensive, le statut et la taille de la maternité

Déterminants (multipares)

	Césariennes potentiellement évitables	Tentatives de voie basse			
	%		p	ORa*	95% CI
	(N=236)	(N=6779)			
Obstetrical unit					
Public	50,9	72,8	$<10^{-4}$	1	
Private	49,2	27,2		2,5	1,9-3,3
Size of OU					
< 1500	50,4	39,9	$<10^{-2}$	1,4	1,0-1,9
1 500-2 499	25,4	29,7		0,9	0,6-1,4
≥ 2 500	24,2	30,4		1	

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Robson, Coulm and others

- Formalised ways of analysing / understanding CS rate discrepancies

Conclusion: why is this relevant to EURO-Peristat's future ?

EUROPEAN PERINATAL HEALTH REPORT

Health and care of pregnant women and babies in Europe in 2010

Thoughts – not evidence

- Variations in rates and their determinants
- RISK assessment / FEAR
- LOSS of SKILL
- Role of the midwife (but not only, eg Belgium or Slovenia still have mostly medical births but CS rates lower than UK)
  - Possibly personalised continued committed TLC
- CP and CS rates (SCPE)
- Replicating Robson and Coulm

Conclusion

- If Modi is correct and clinicians are preparing a generation of overweight asthmatics and diabetics (possibly through epigenetic change)
- Then this is a real PRIORITY and well within the possibilities of an EU (funded) collaboration inside EURO-Peristat or its descendant?