

# Post term pregnancies in Sweden -

## Effect of policy-changes

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# Post term pregnancies in Sweden

Background

Methods

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Take-home messages

# Post term pregnancies in Sweden

Background

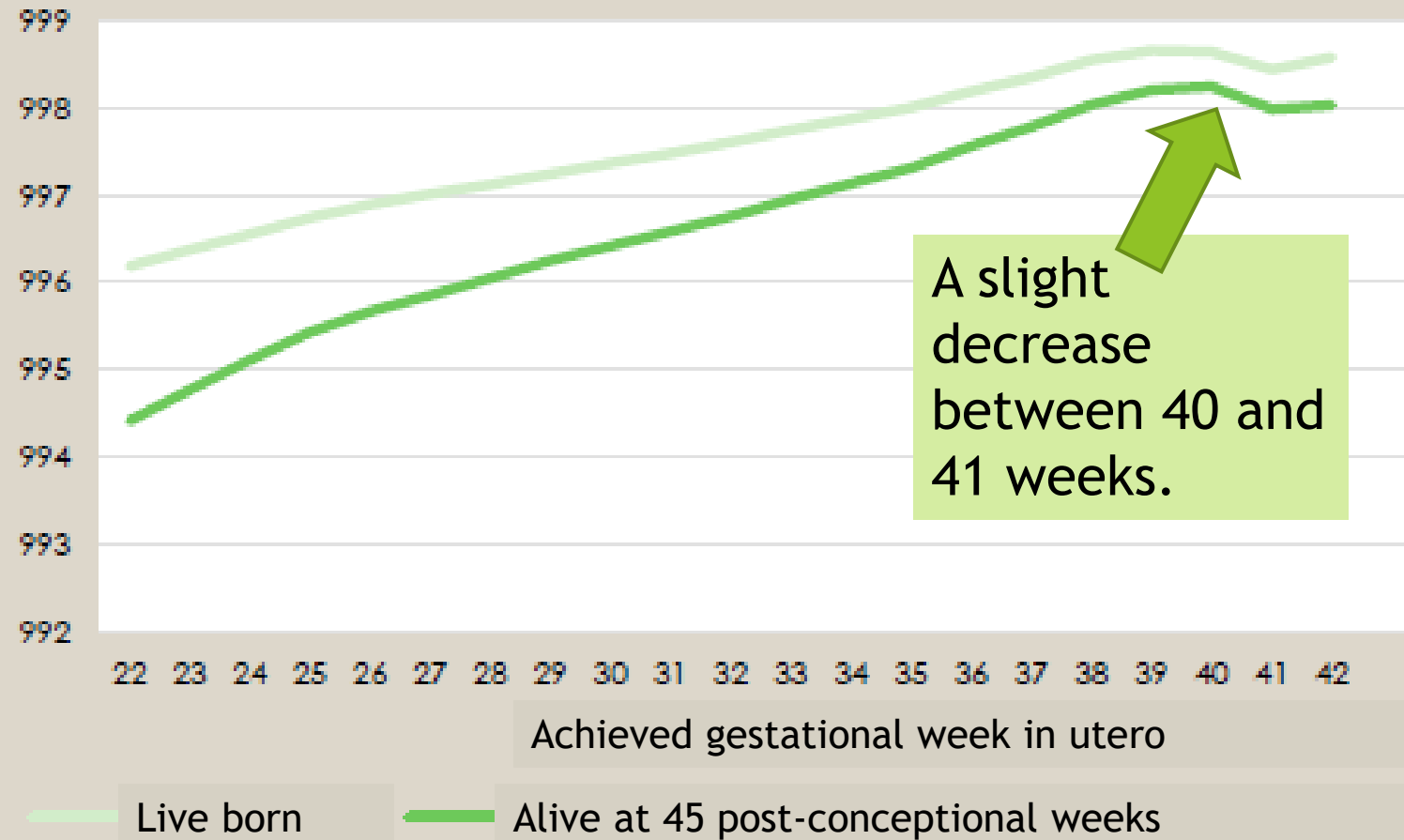
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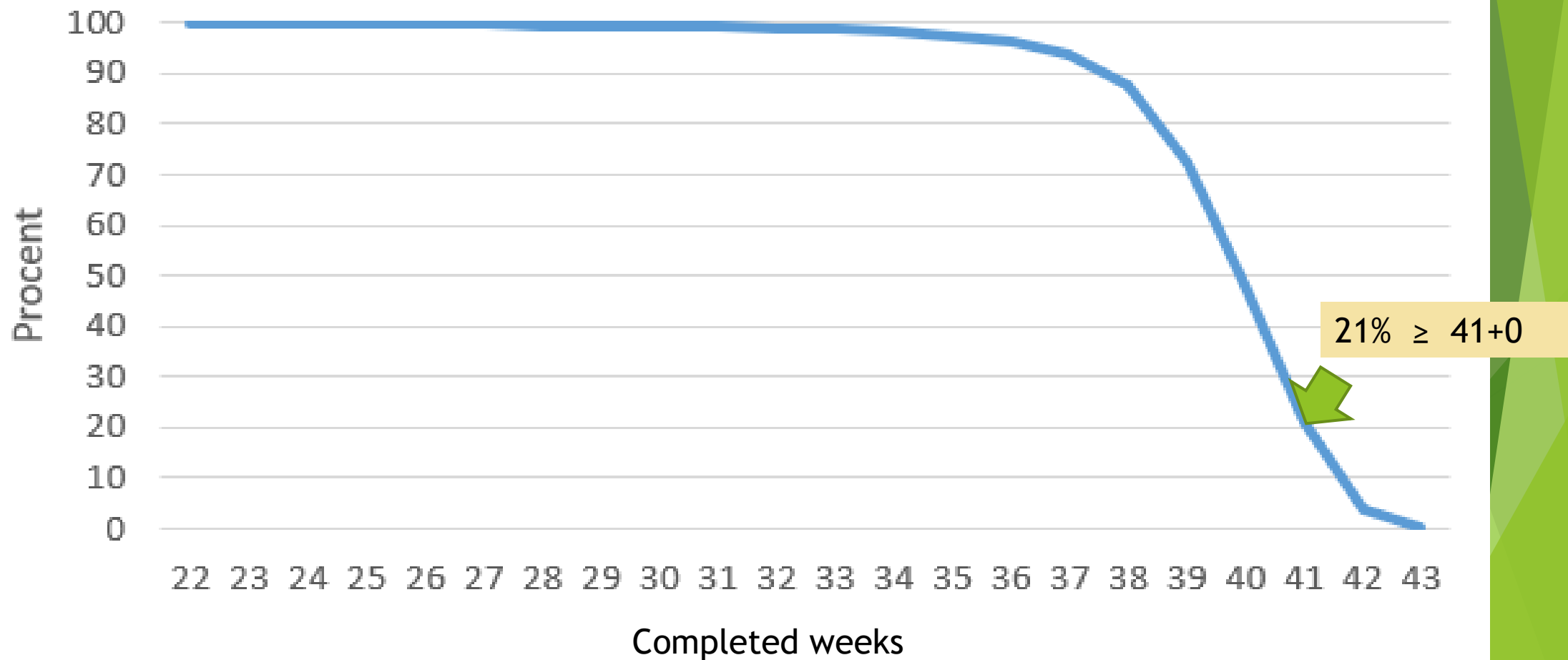
Chance of live-birth or survival to GA 45+0, respectively, at achieved gestational week 22 to 42.

Per thousand



Källa: Socialstyrelsen, Medicinska födelserregistret, 2008-2016

## Percentage of ongoing pregnancies by gestational week. Sweden 2017-2021



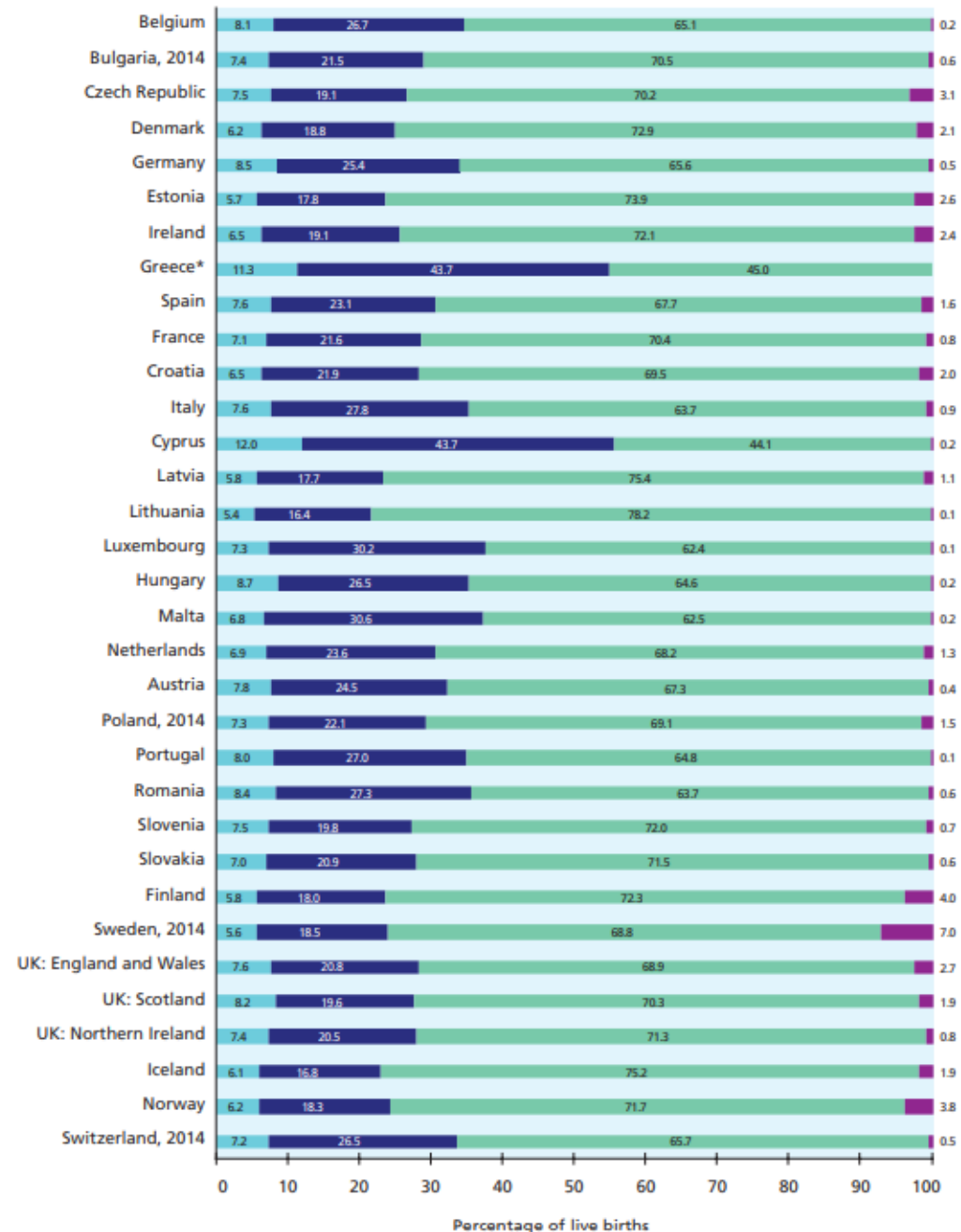


#### EUROPEAN PERINATAL HEALTH REPORT

Core indicators of the health and care of pregnant women and babies in Europe in 2015



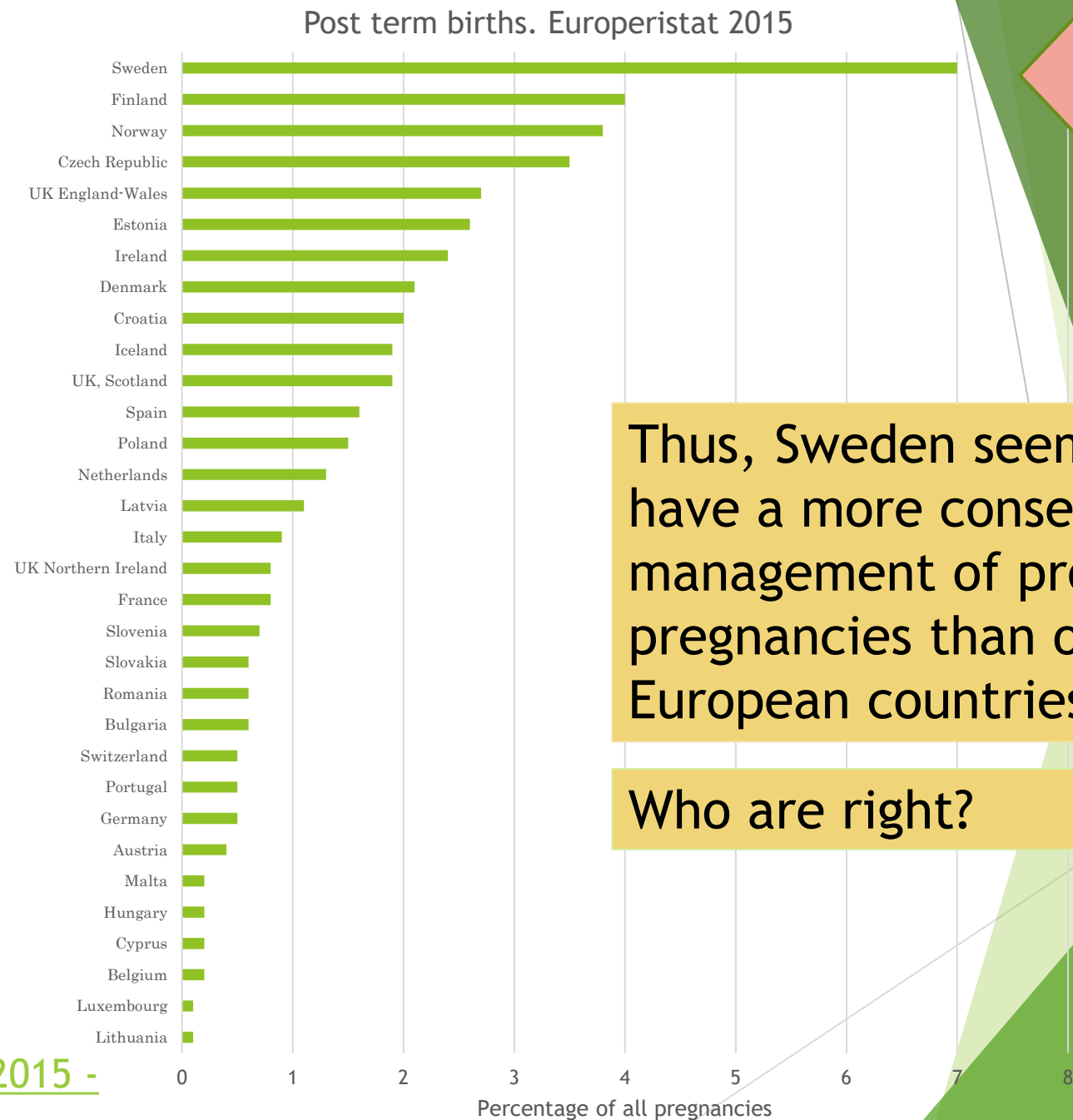
Figure C5.2 Percentages of preterm, early term, full term, and post-term live births in 2015



European Perinatal Health Report 2015 -  
Euro-Peristat ([europeristat.com](http://europeristat.com))



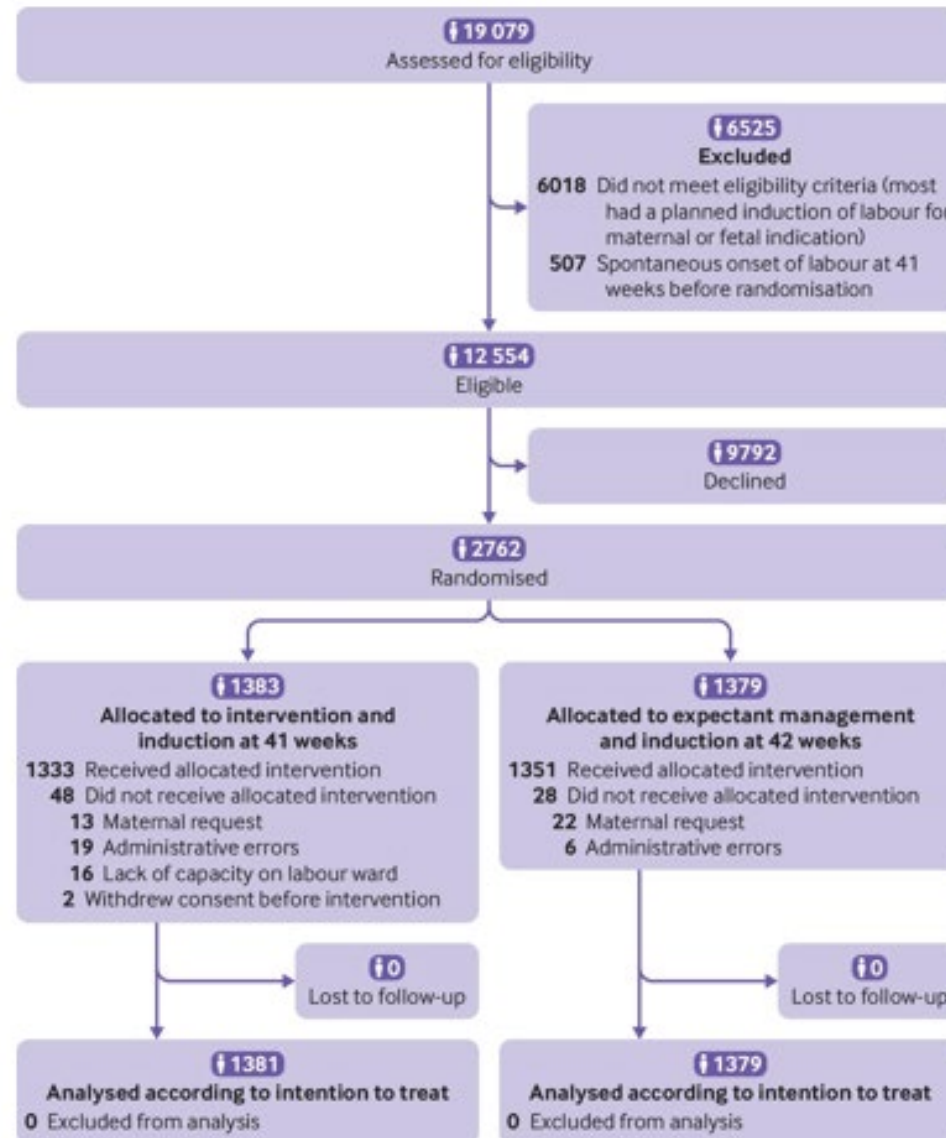
European Perinatal Health Report 2015 -  
[Euro-Peristat \(europeristat.com\)](http://europeristat.com)



Thus, Sweden seems to have a more conservative management of prolonged pregnancies than other European countries.

Who are right?

## Flowchart of eligibility, randomisation, delivery, and assessment.



In 2019 a Swedish RCT was published - an ambitious study designed to compare perinatal outcome after induction at 41+0 compared to a conservative management (business as usual).



- **Composit perinatal outcome:** Stillbirths, neonatal death, Apgar<7 vid 5 min, UApH<7.0, metabol acidoses (UApH<7.05 och BD>12 mmol/L), HIE, brain haemorrhage, convulsions, mekonium aspiration, respirator, brachialplexus damage.
- **The study was stopped when six cases of perinatal death occurred in the expectant-arm (0 cases in the induction arm) P=0.03**
- **The Expected number of perinatal deaths in the 'business as usual'-group was 2-3.**
- **There was no difference between the arms regarding the primary outcome. (2.4% vs 2.2%, p=0.9).**
- **All perinatal deaths occurred among children to primiparous women, but the interaction was not statistically significant.**

In January 2000, in spite of the remaining questions, the Swedish obstetric association decided to publish recommendations that all women that reached 41+0 completed weeks should be offered induction

It was decided that the impact of the new recommendations should be evaluated using data from the Swedish quality registers: the Pregnancy Register and the Register of Neonatal care (SNQ), and published in the annual reports.

- How was the compliance to the new recommendations?
- How many more inductions were performed
- Did the incidence of perinatal deaths decrease?
- Did the incidence of emergency cesareans increase?

# Post term pregnancies in Sweden

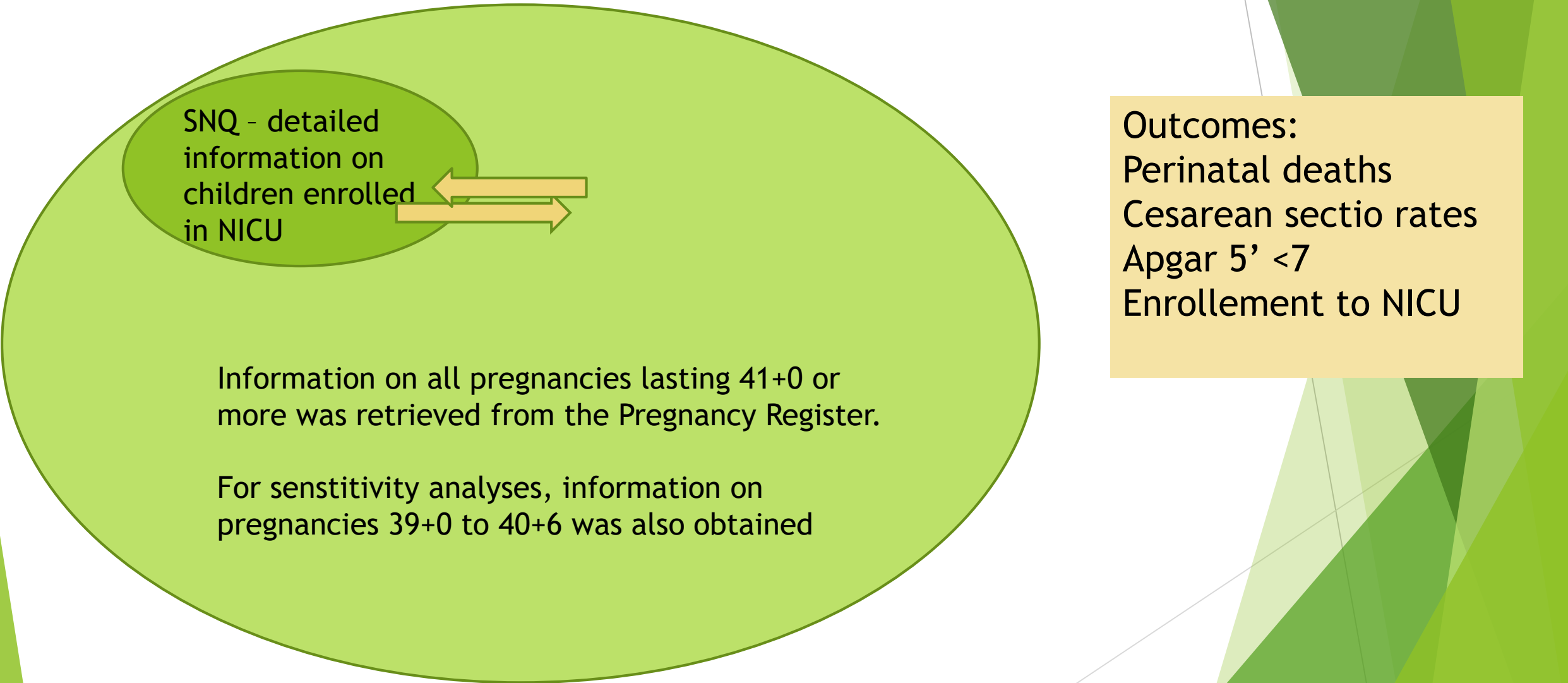
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# Data sources



SNQ - detailed  
information on  
children enrolled  
in NICU

Information on all pregnancies lasting 41+0 or more was retrieved from the Pregnancy Register.

For sensitivity analyses, information on pregnancies 39+0 to 40+6 was also obtained

Outcomes:  
Perinatal deaths  
Cesarean section rates  
Apgar 5' <7  
Enrollement to NICU

# Post term pregnancies in Sweden

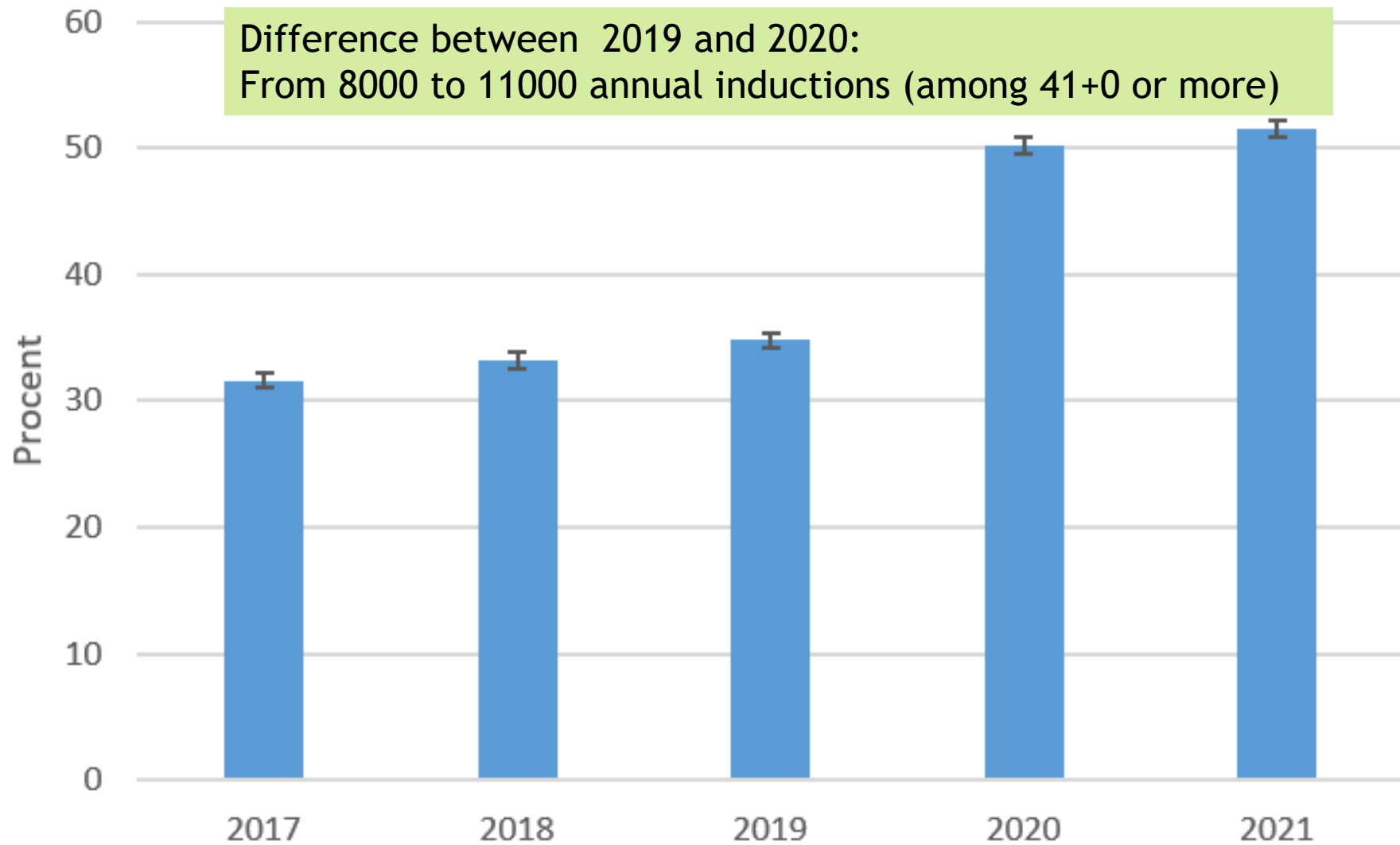
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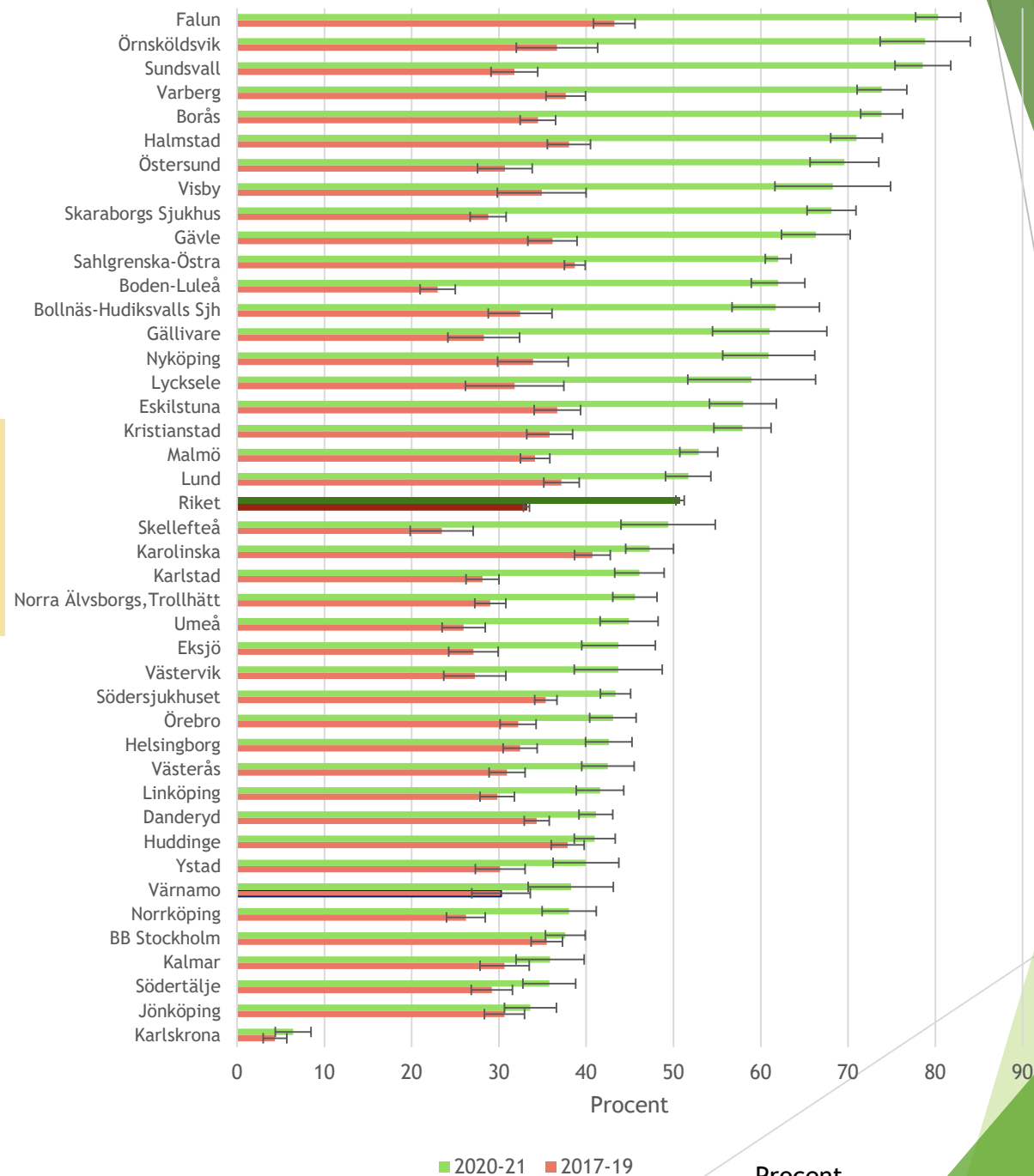
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## Percentage of inductions among pregnancies 41+0 or more, by year of birth

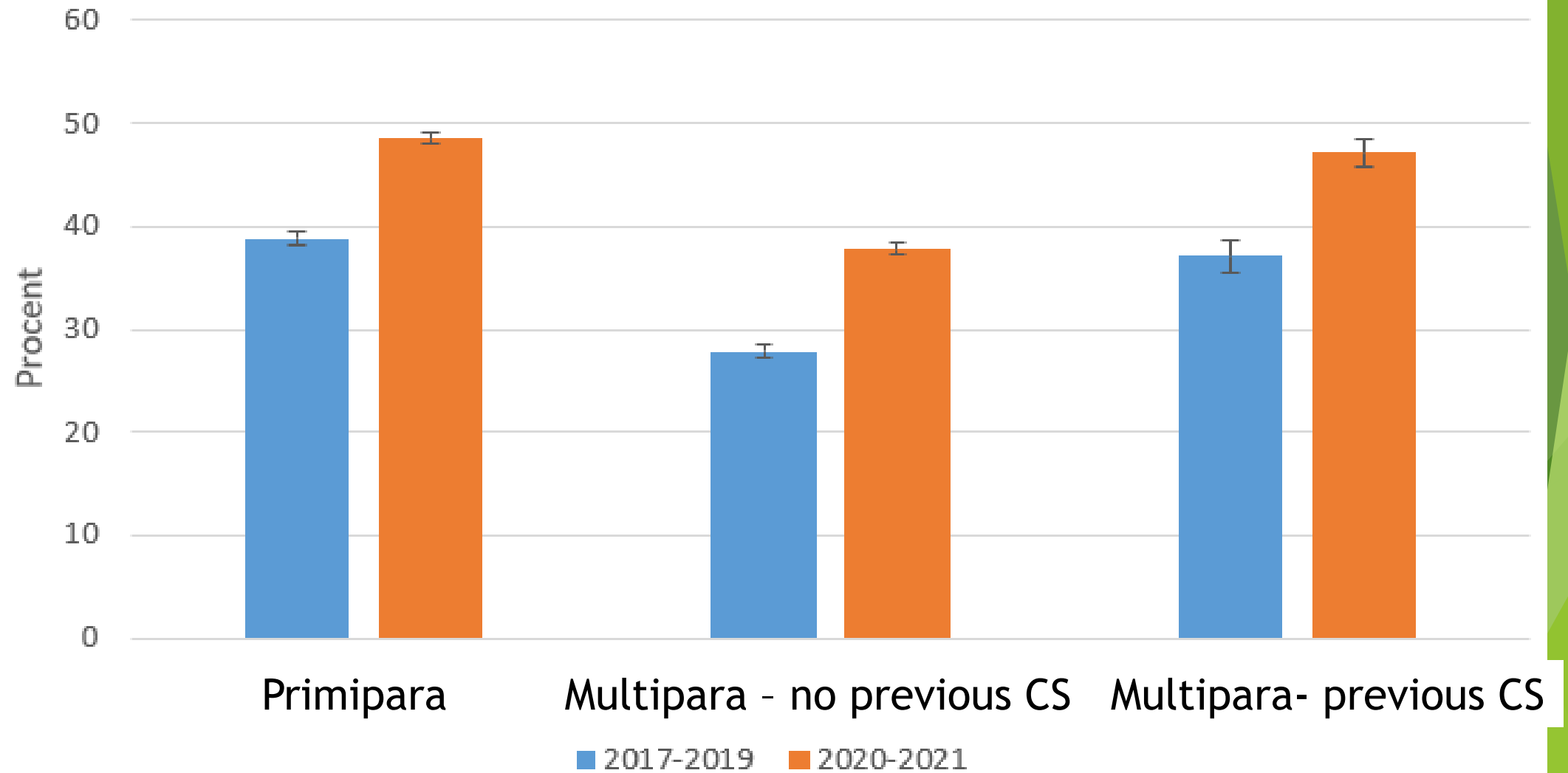


## Percentage of inductions among pregnancies 41+0 or more

The induction rate increased  
between the periods in all  
delivery units - but to  
different extent

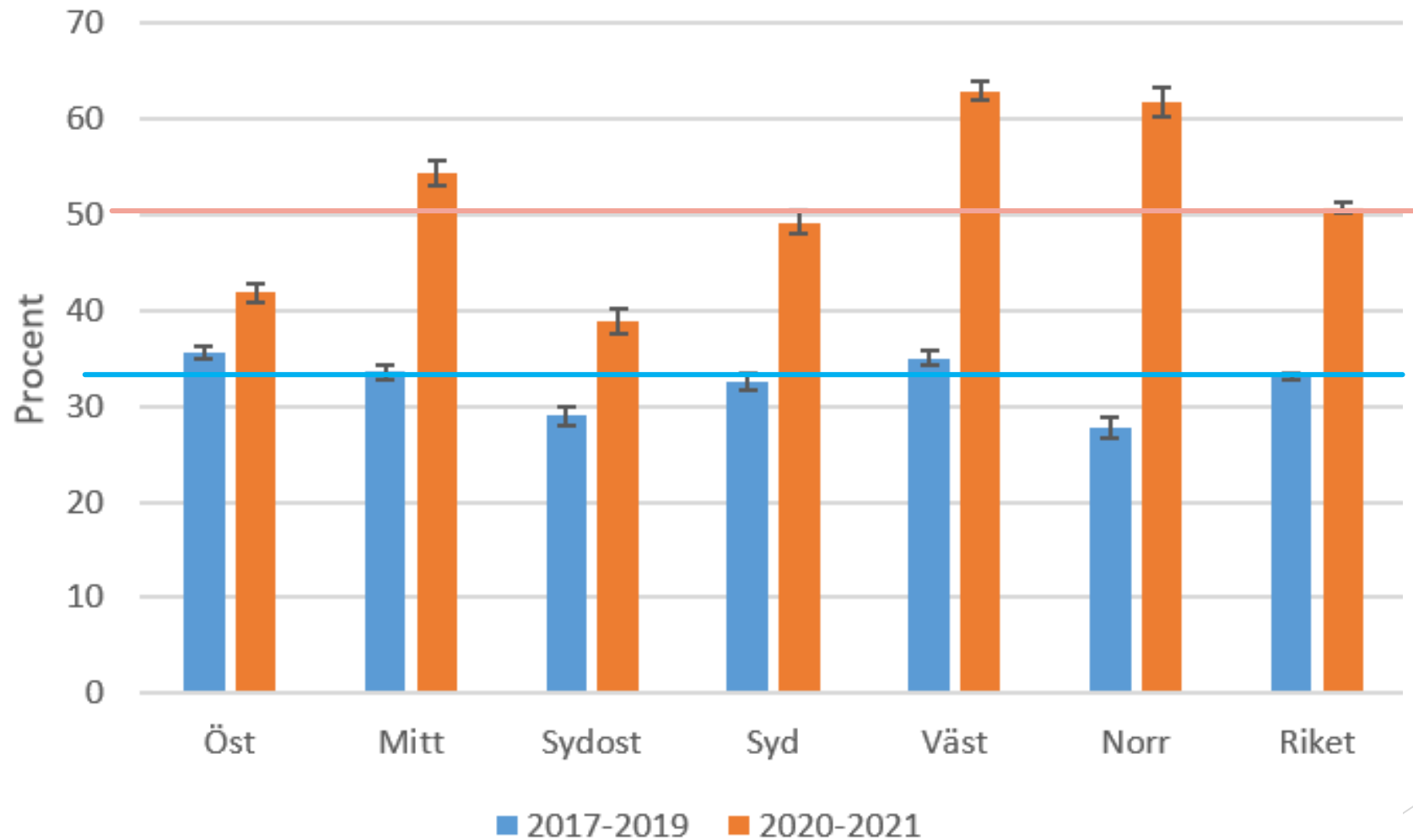


## Induction rate among pregnancies $\geq 41+0$ weeks





## Proportion of inductions among deliveries $\geq 41+0$ , by region and year of delivery



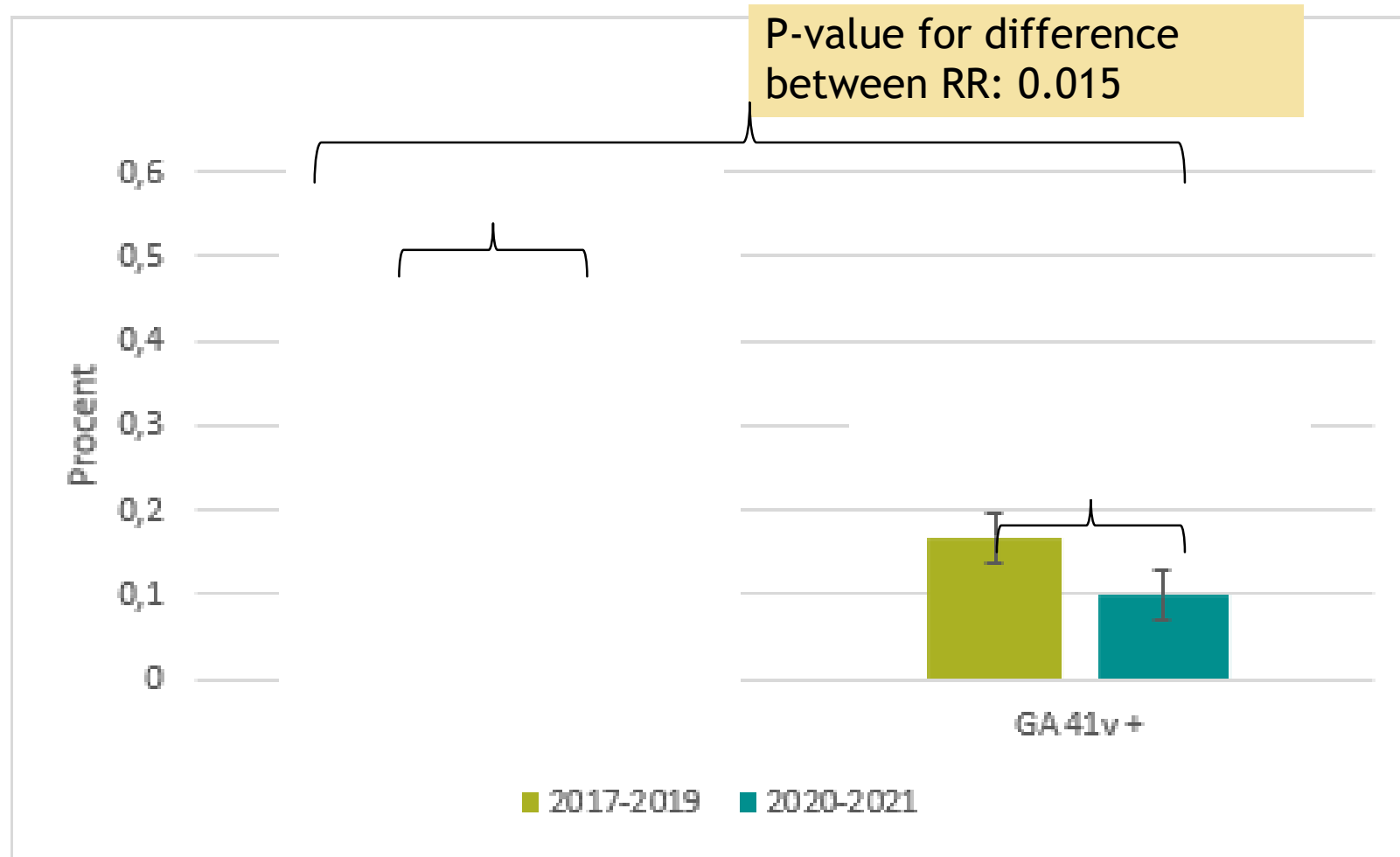
	Procentuell ökning (%)
Öst	17
Mitt	62
Sydost	34
Syd	51
Väst	80
Norr	123
Riket	53

The induction rate increased in all regions, but to different extent

Thus - there was a pronounced increase of induction rate

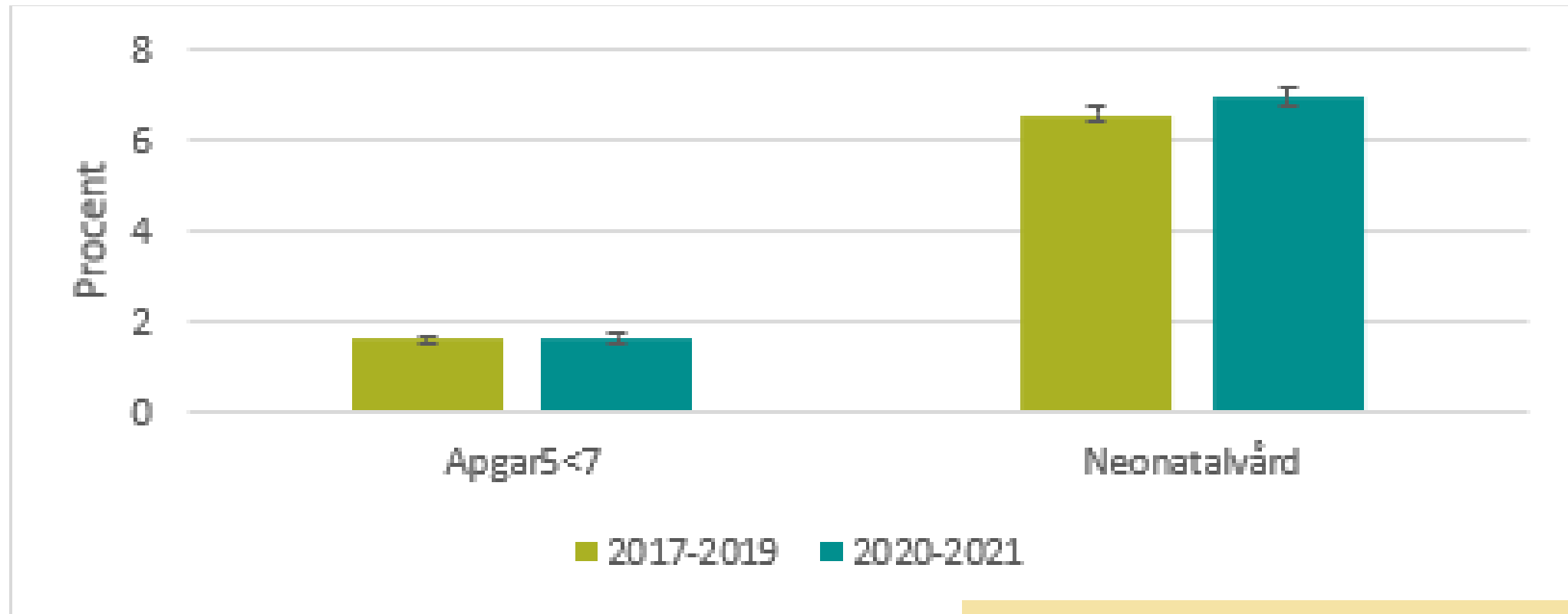
Was the perinatal death rate lower?  
Did the CS rate increase?

# Perinatal death by gestational duration and year of birth.



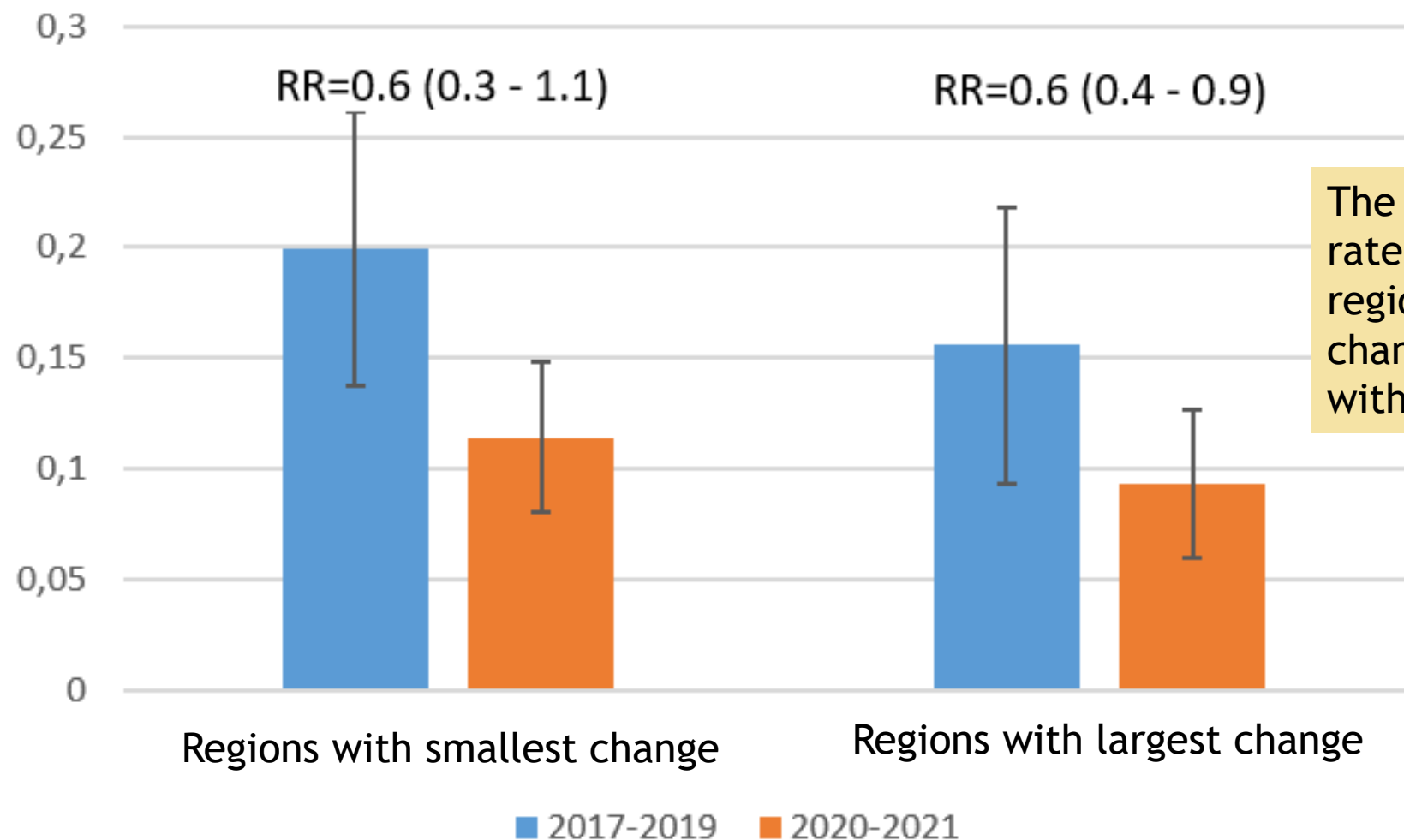
Källa: Graviditetsregistret [2017-2021](#)

Apgar score and need of neonatal care among children born at 41+0 weeks or more by year of birth.



No effect on Apgar or need of neonatal care

Perinatal death rate among children born at 41+0 weeks or more, by induction rate change.

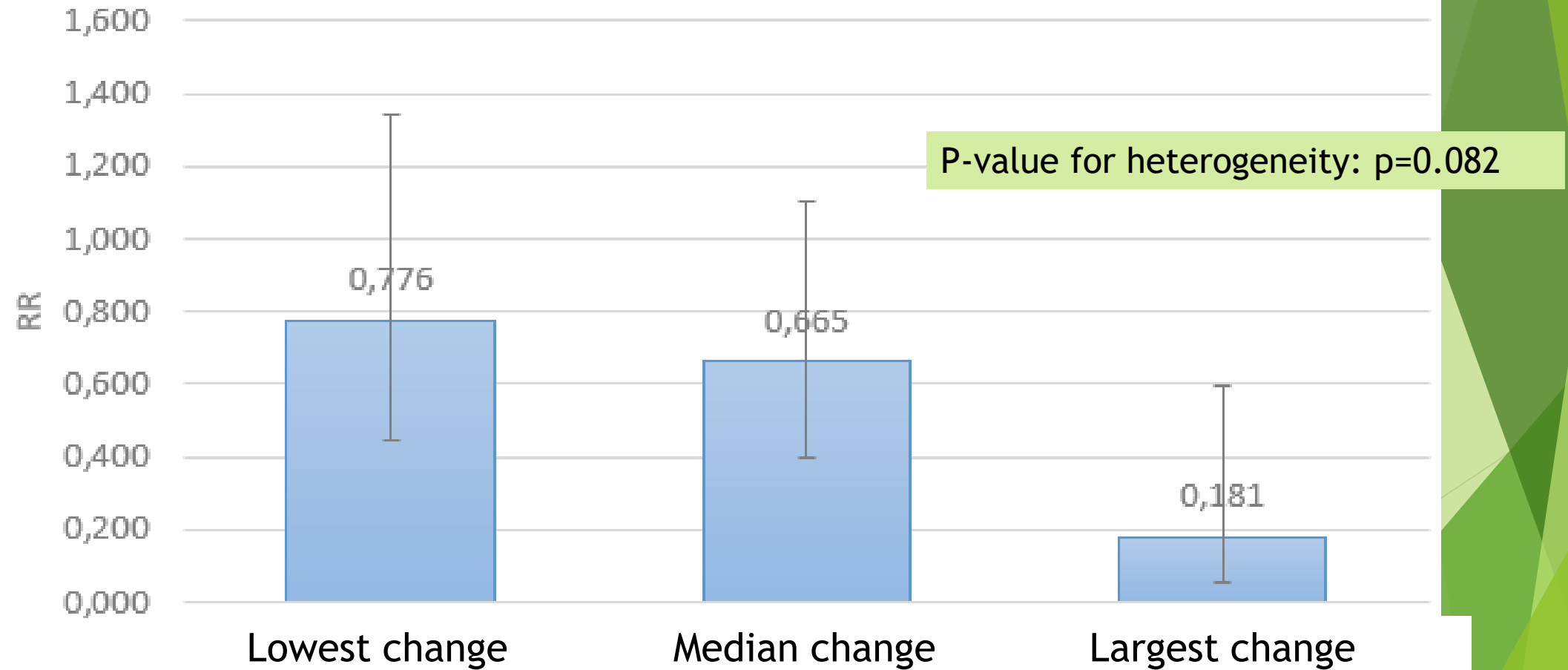


The change of perinatal death rate was similar between regions with a marked policy change compared to regions with a modest policy change.

		Induktions rate 2017-	Induktions rate 2020-			Tot N 2020-21
	SjukhusNr	19	21	Kvot	Tertil	
BB Stockholm	5	35,49451	37,60733	1,059525	1	1747
Huddinge	3	37,87336	40,97877	1,081995	1	1696
Jönköping	18	30,63584	33,61082	1,097108	1	961
Karolinska	2	40,7172	47,26135	1,160722	1	1278
Kalmar	22	30,64202	35,86207	1,170356	1	580
Danderyd	4	34,32483	41,10845	1,19763	1	2508
Södertälje	7	29,18694	35,76642	1,225426	1	959
Södersjukhuset	1	35,36517	43,36425	1,226185	1	3127
Värnamo	20	30,24862	38,2199	1,263525	1	382
Helsingborg	29	32,42995	42,58699	1,313199	1	1322
Ystad	30	30,14113	39,96914	1,326066	1	648
Örebro	37	32,19488	43,0597	1,337471	1	1340
Västerås	11	30,92516	42,48555	1,373818	1	1038
Lund	28	37,16814	51,68776	1,390647	1	1422
Linköping	16	29,80676	41,58103	1,39502	2	1265
Norrköping	17	26,22517	38,04463	1,450692	2	941
Karlskrona	24	4,347826	6,422018	1,477064	2	545
Malmö	27	34,14634	52,8982	1,549162	2	2053
Norra Älvsborgs, Trollhätt	35	29,00519	45,57731	1,57135	2	1481
Eskilstuna	9	36,6878	57,95276	1,579619	2	635
Sahlgrenska-Östra	33	38,70463	62,00096	1,6019	2	4158
Västervik	21	27,24252	43,66577	1,602853	2	371
Eksjö	19	27,08114	43,69115	1,613342	2	531
Kristianstad	26	35,80923	57,89474	1,616755	2	874
Karlstad	39	28,12211	46,08256	1,638659	2	1187
Umeå	44	25,95041	44,90741	1,730508	2	864
Nyköping	10	33,90476	60,90909	1,796476	2	330
Gävle	14	36,13596	66,30435	1,834858	2	552
Lycksele	46	31,80077	58,95954	1,854029	3	173
Falun	12	43,21729	80,32967	1,858739	3	910
Halmstad	31	38,02436	70,9856	1,866846	3	903
Bollnäs-Hudiksvalls Sjh	15	32,43671	61,70799	1,902412	3	363
Visby	23	34,91124	68,25397	1,955071	3	189
Varberg	32	37,66234	73,87486	1,961505	3	911
Skellefteå	45	23,44045	49,39024	2,107052	3	328
Borås	34	34,46488	73,84856	2,142719	3	1281
Örnsköldsvik	41	36,65049	78,83817	2,151081	3	241
Gällivare	48	28,26087	61,03286	2,159624	3	213
Östersund	43	30,68592	69,58175	2,267546	3	526
Skaraborgs Sjukhus	36	28,77155	68,10507	2,367097	3	1066
Sundsvall	40	31,75966	78,57143	2,473938	3	630
Boden-Luleå	47	22,98578	61,98953	2,696864	3	955

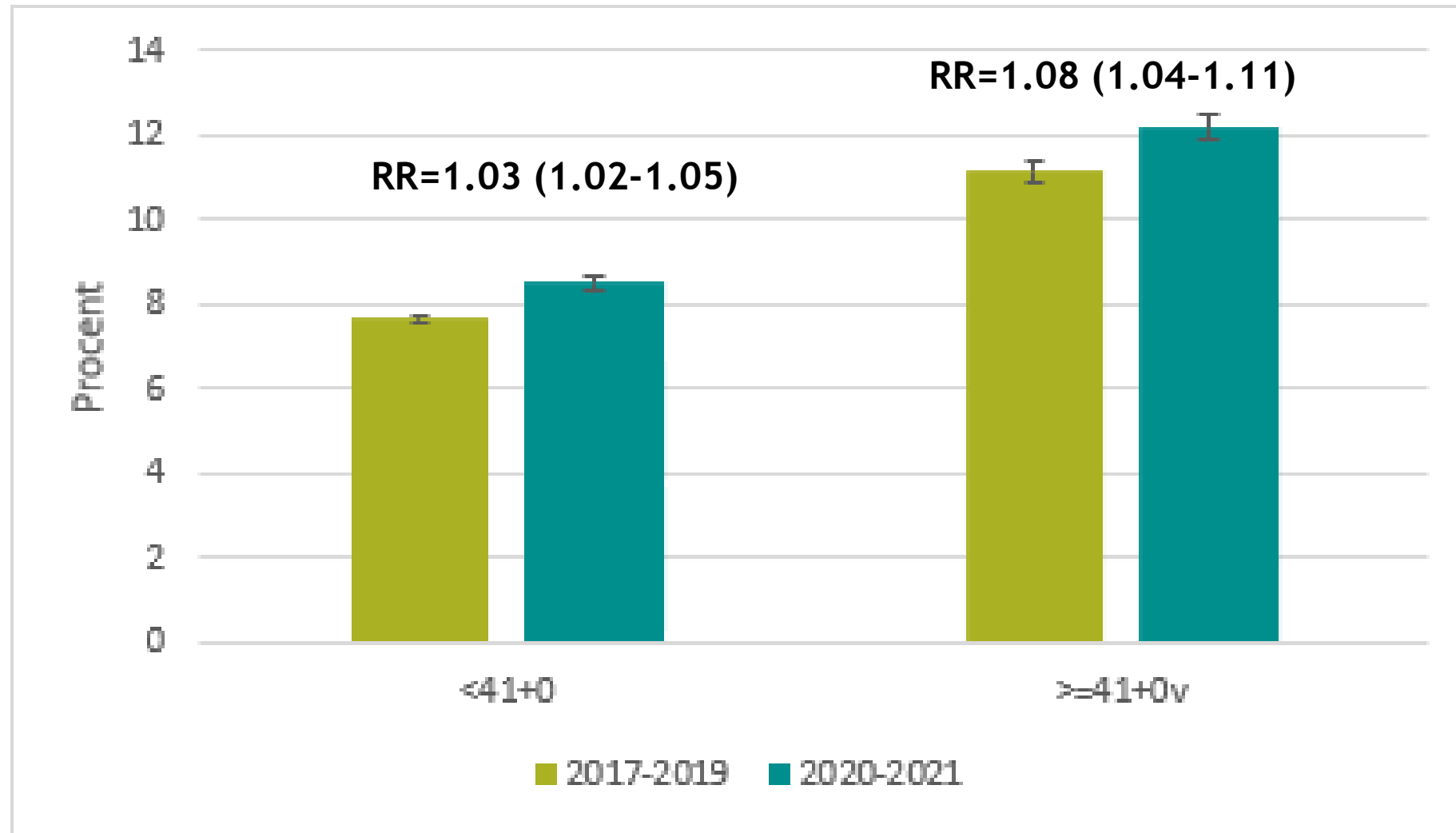
To analyze the association between the size of change and outcome, the 'change rate' was decided for all hospitals

## RR for perinatal death among pregnancies $\geq 41+0$ weeks. 2020-21 vs 2017-19



Hospitals by magnitude of induction-rate change

## Cesarean secio in deliveries by gestational age and year of birth.





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- ▶ A cautious estimate of number-needed-to-treat by studying policy-changes:
- ▶ Frequency perinatal death 2017-2019: 0.17%
- ▶ Frequency perinatal death 2020-2021: 0.10%
- ▶ Risk difference: 0.07% to be applied on 21000 children → 15 rescued children.
- ▶ Policy change led to 3000 more annual inductions.
- ▶ If a casual association is assumed: By performing 3000 more inductions, 15 children could be saved. **Thus, 200 inductions to save one child.**



That sounds reasonable, or?  
Would it be possible to find algorithms to identify children who are at highest risk and induce those deliveries instead of inducing all?  
More research is warranted!

# Post term pregnancies in Sweden - Results after policy-changes

Thank you!