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Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

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APPENDIX

Impact of COVID-19 mitigation measures on the incidence of preterm birth: a national quasi-experimental study

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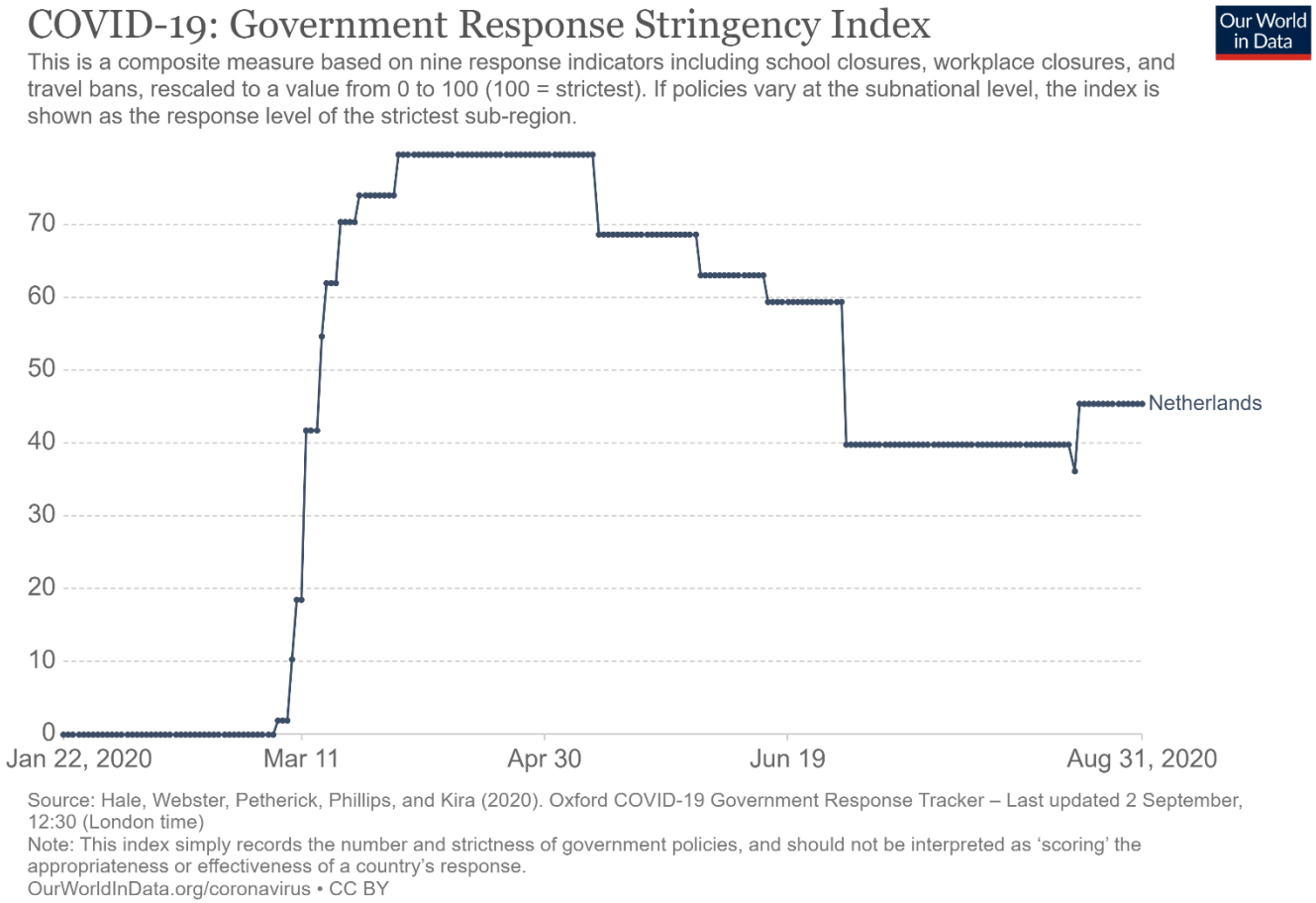
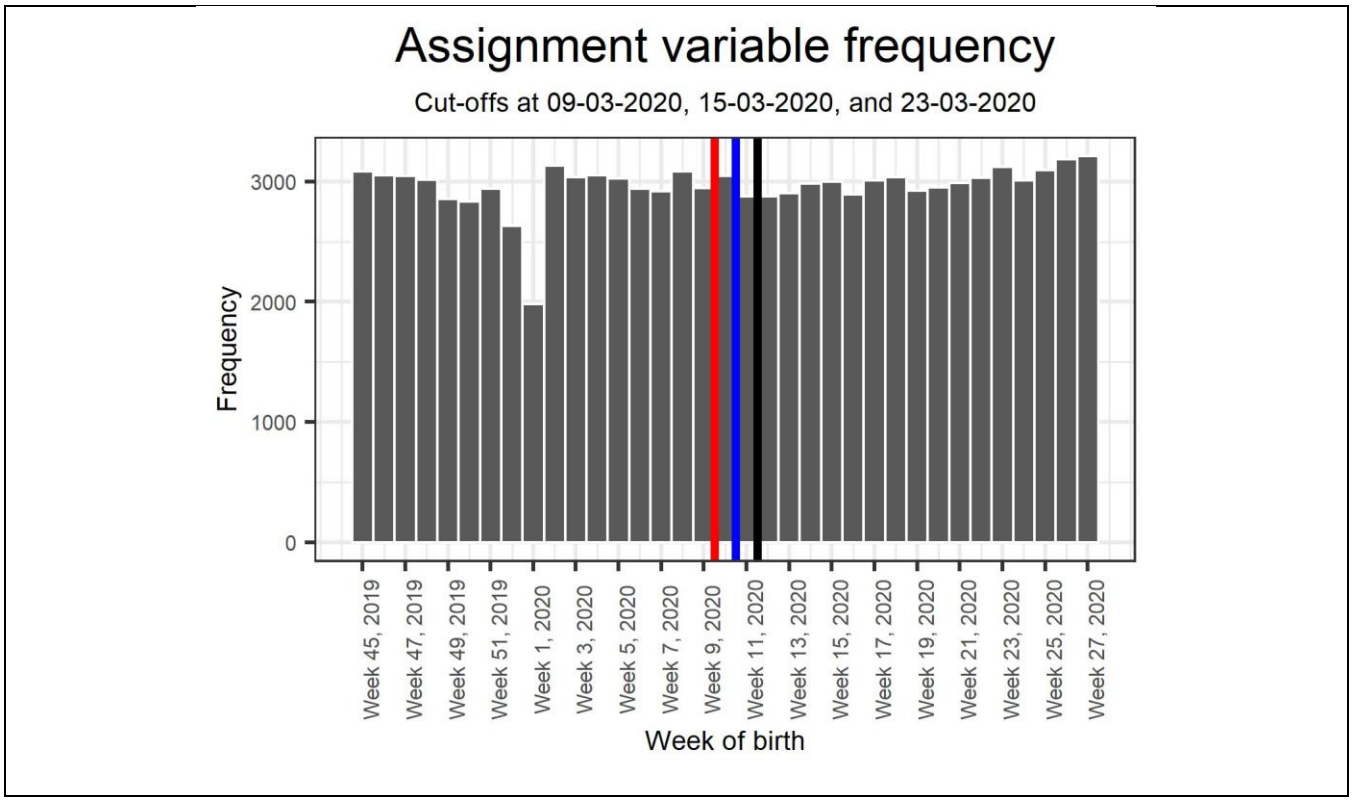
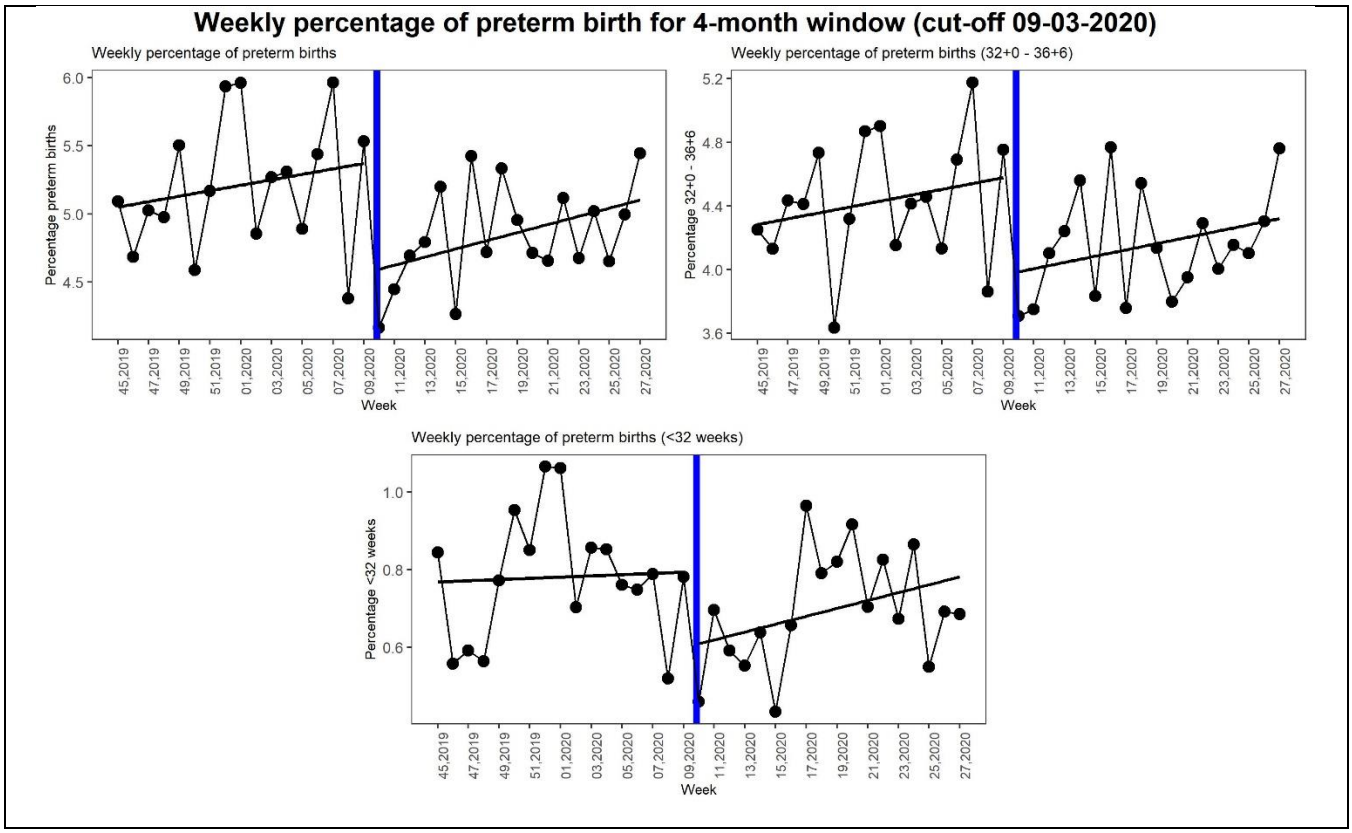


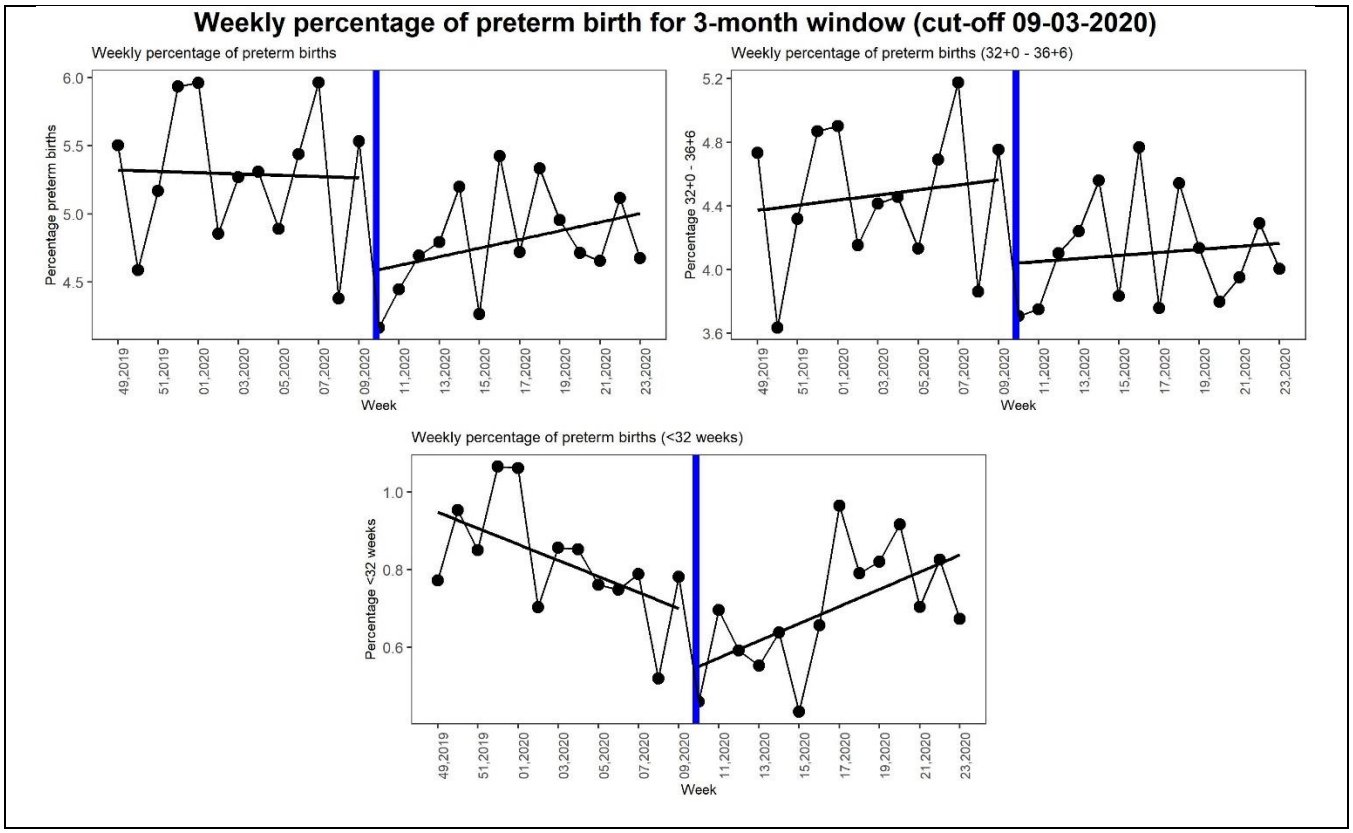
SUPPLEMENTAL FIGURE 1. TEMPORAL PATTERNING OF THE COVID-19 GOVERNMENT RESPONSE STRINGENCY INDEX IN THE NETHERLANDS



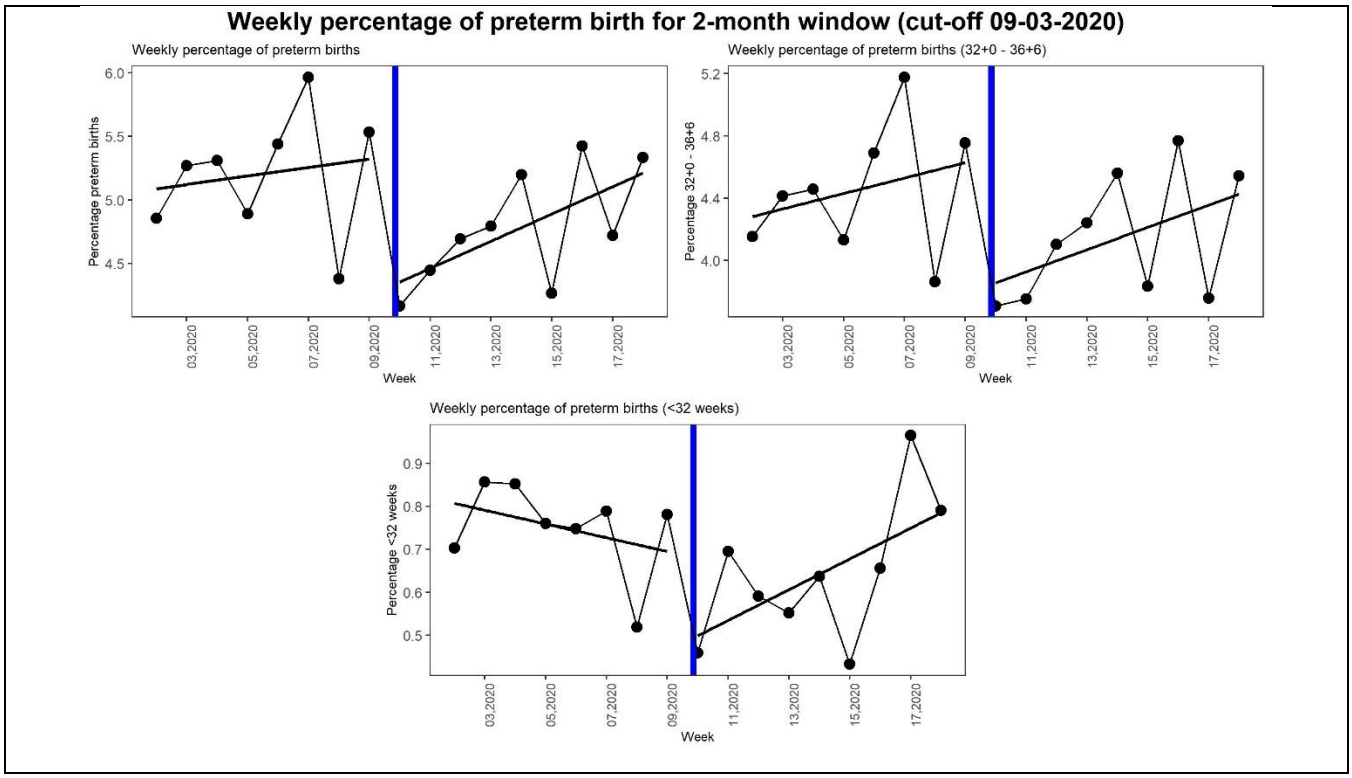
SUPPLEMENTAL FIGURE 2. HISTOGRAM OF ASSIGNMENT VARIABLE, DEMONSTRATING THAT WEEK OF BIRTH IS CONTINUOUS NEAR CUT-OFF VALUES AND NOT AFFECTED BY THE COVID-19 MITIGATION MEASURES



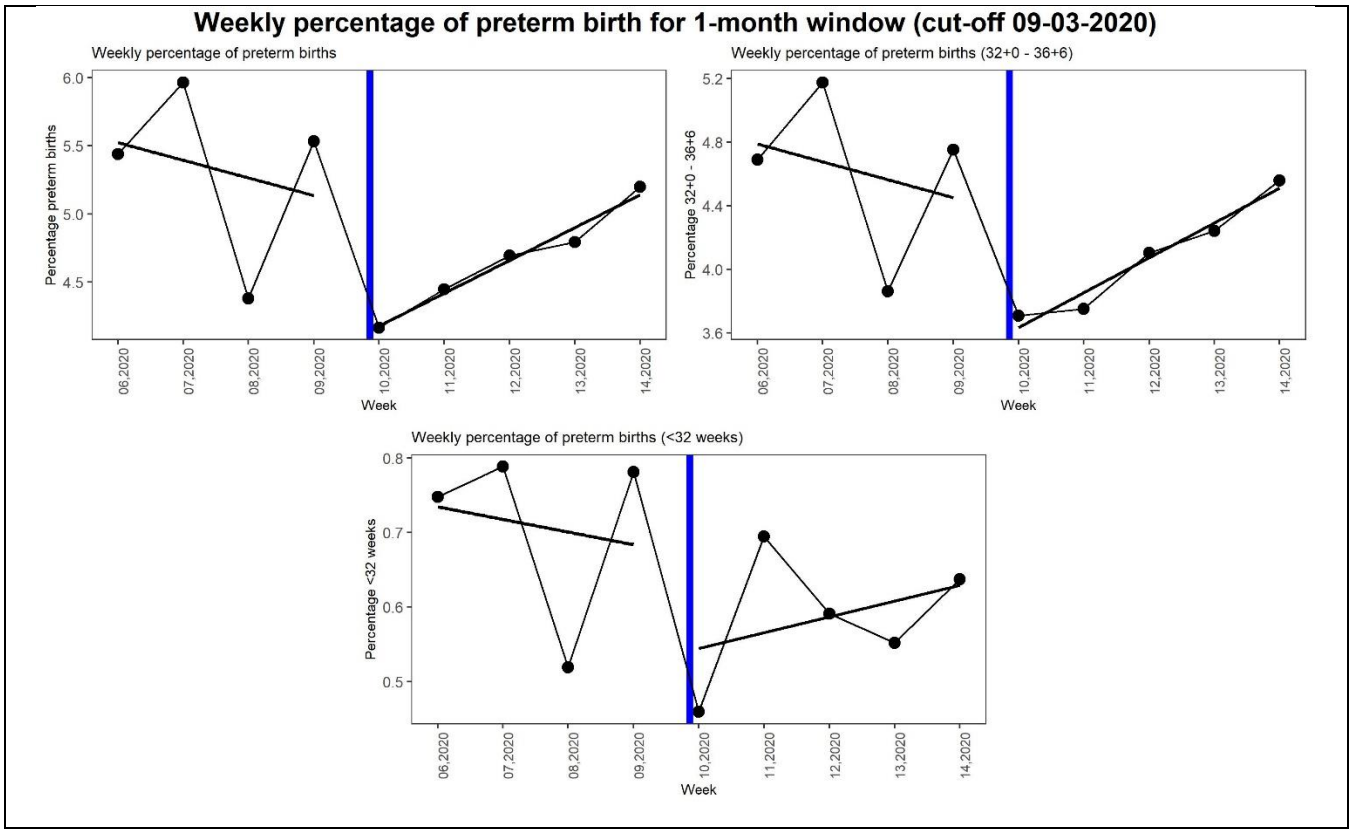
SUPPLEMENTAL FIGURE 3. WEEKLY PERCENTAGE OF PRETERM BIRTH FOR 4-MONTH WINDOW PLOTTED AGAINST ASSIGNMENT VARIABLE (WEEK OF BIRTH) TO SHOW DISCONTINUITY AT CUT-OFF VALUE (09-03-2020)



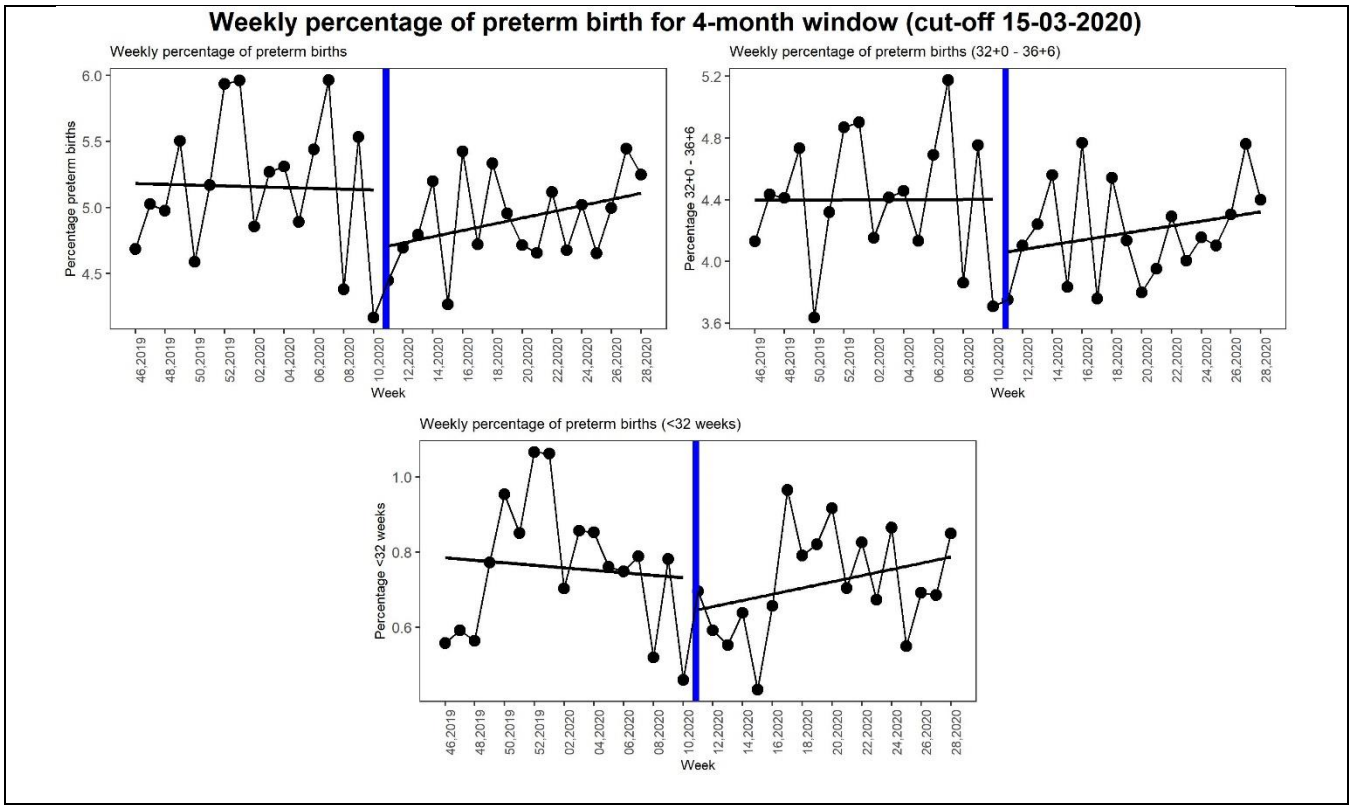
SUPPLEMENTAL FIGURE 4. WEEKLY PERCENTAGE OF PRETERM BIRTH FOR 3-MONTH WINDOW PLOTTED AGAINST ASSIGNMENT VARIABLE (WEEK OF BIRTH) TO SHOW DISCONTINUITY AT CUT-OFF VALUE (09-03-2020)



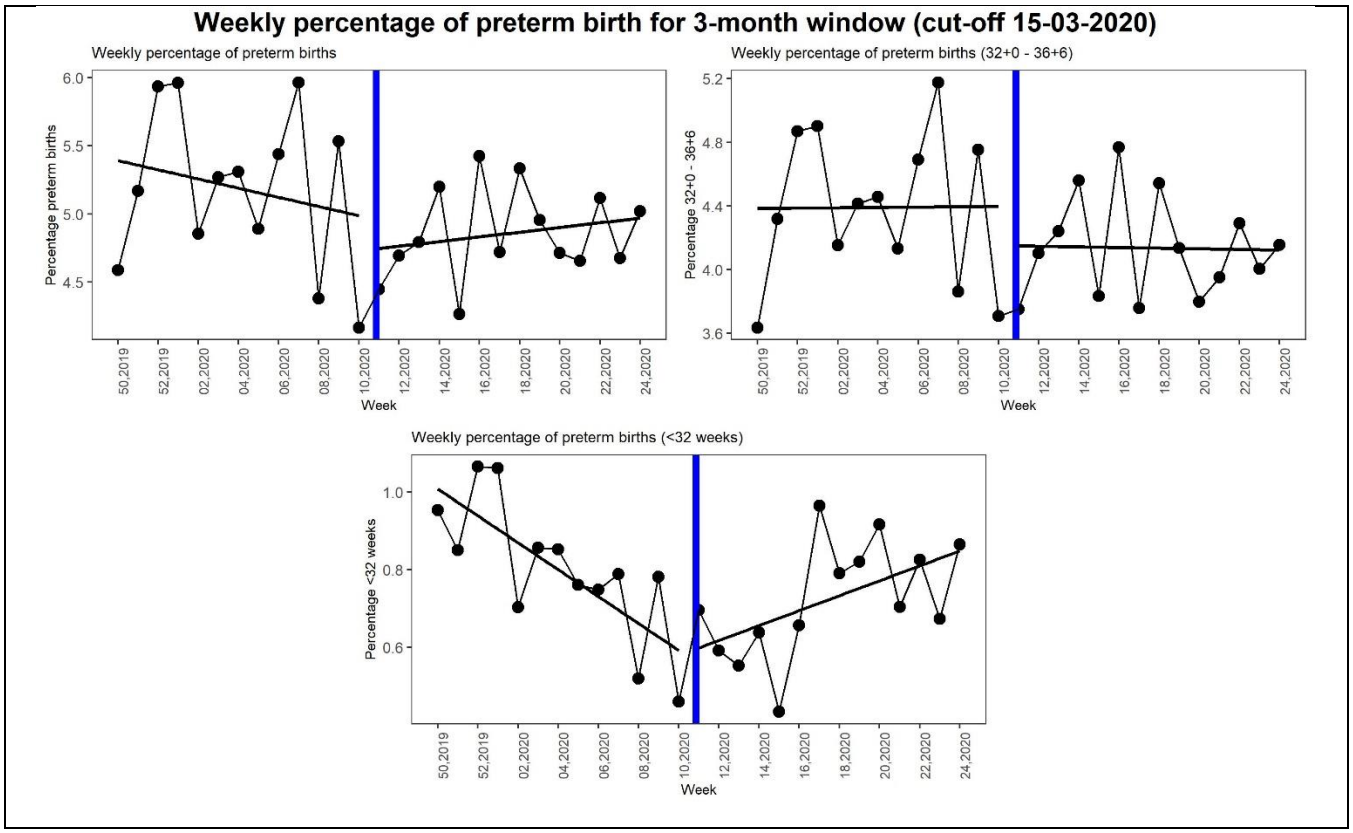
SUPPLEMENTAL FIGURE 5. WEEKLY PERCENTAGE OF PRETERM BIRTH FOR 2-MONTH WINDOW PLOTTED AGAINST ASSIGNMENT VARIABLE (WEEK OF BIRTH) TO SHOW DISCONTINUITY AT CUT-OFF VALUE (09-03-2020)



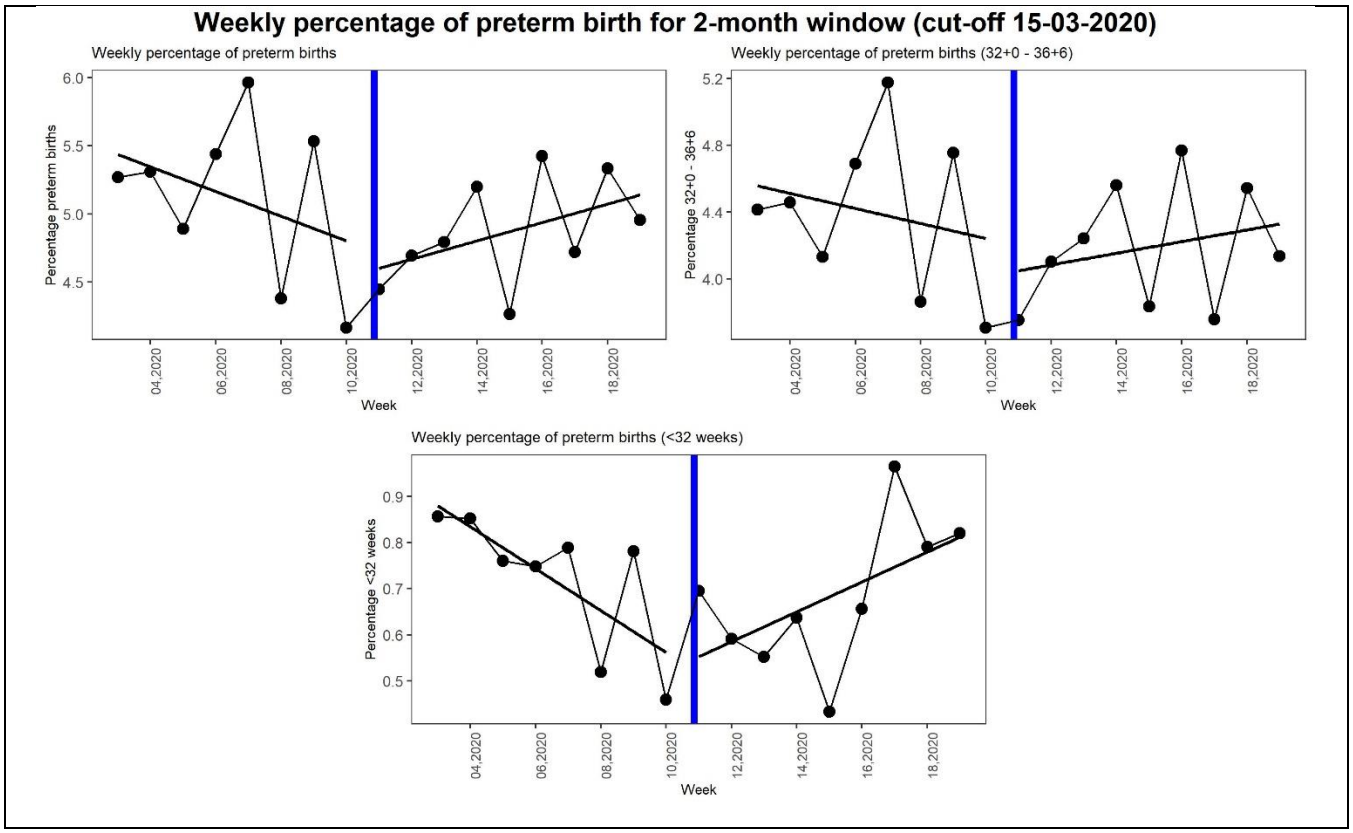
SUPPLEMENTAL FIGURE 6. WEEKLY PERCENTAGE OF PRETERM BIRTH FOR 1-MONTH WINDOW PLOTTED AGAINST ASSIGNMENT VARIABLE (WEEK OF BIRTH) TO SHOW DISCONTINUITY AT CUT-OFF VALUE (09-03-2020)



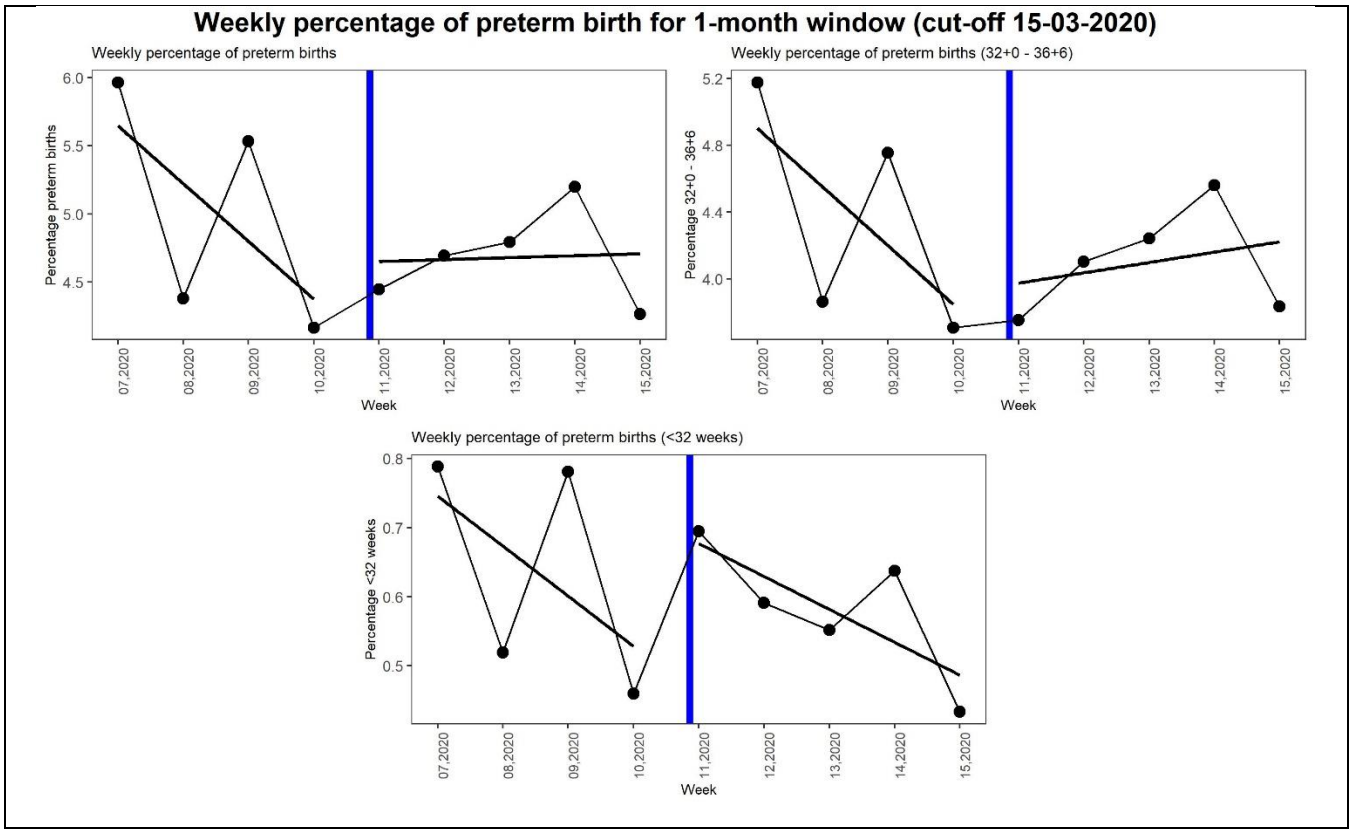
SUPPLEMENTAL FIGURE 7. WEEKLY PERCENTAGE OF PRETERM BIRTH FOR 4-MONTH WINDOW PLOTTED AGAINST ASSIGNMENT VARIABLE (WEEK OF BIRTH) TO SHOW DISCONTINUITY AT CUT-OFF VALUE (15-03-2020)



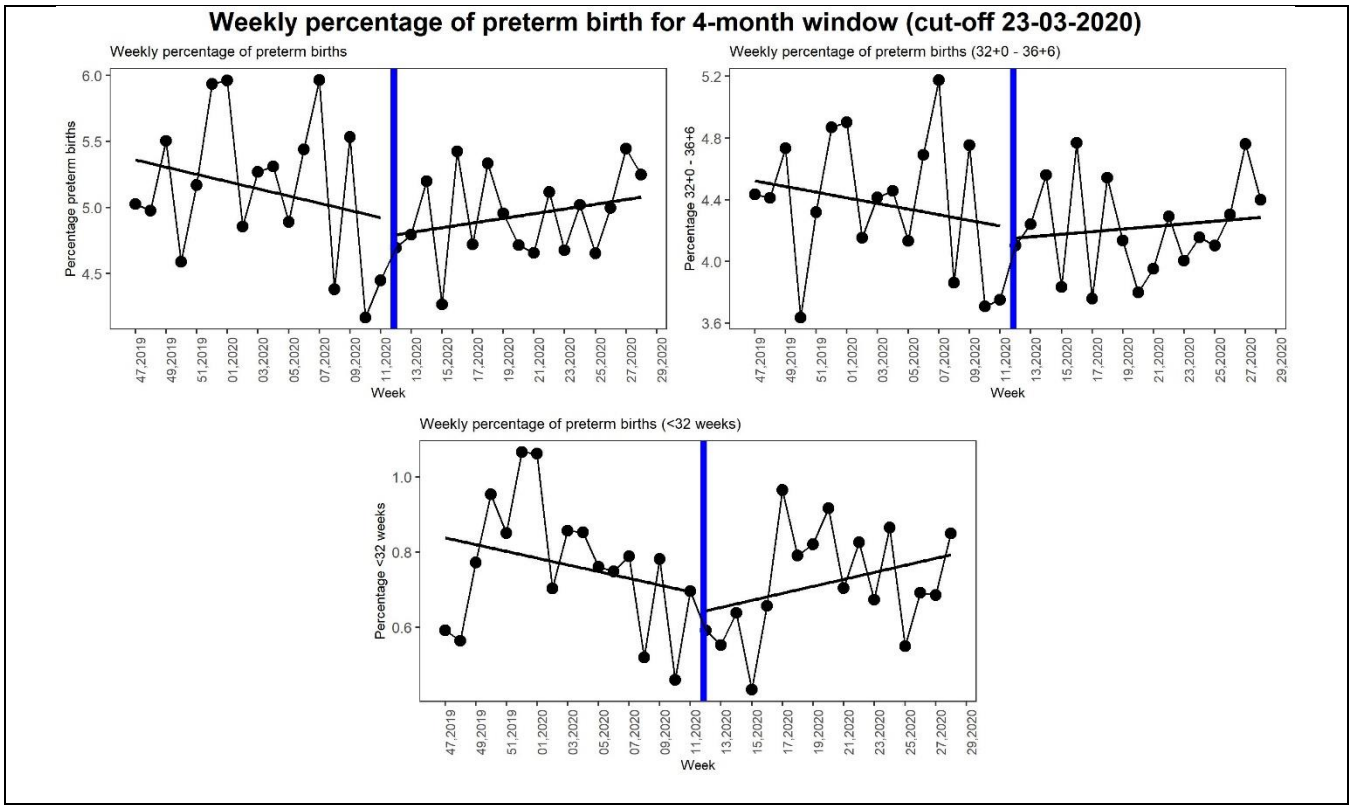
SUPPLEMENTAL FIGURE 8. WEEKLY PERCENTAGE OF PRETERM BIRTH FOR 3-MONTH WINDOW PLOTTED AGAINST ASSIGNMENT VARIABLE (WEEK OF BIRTH) TO SHOW DISCONTINUITY AT CUT-OFF VALUE (15-03-2020)



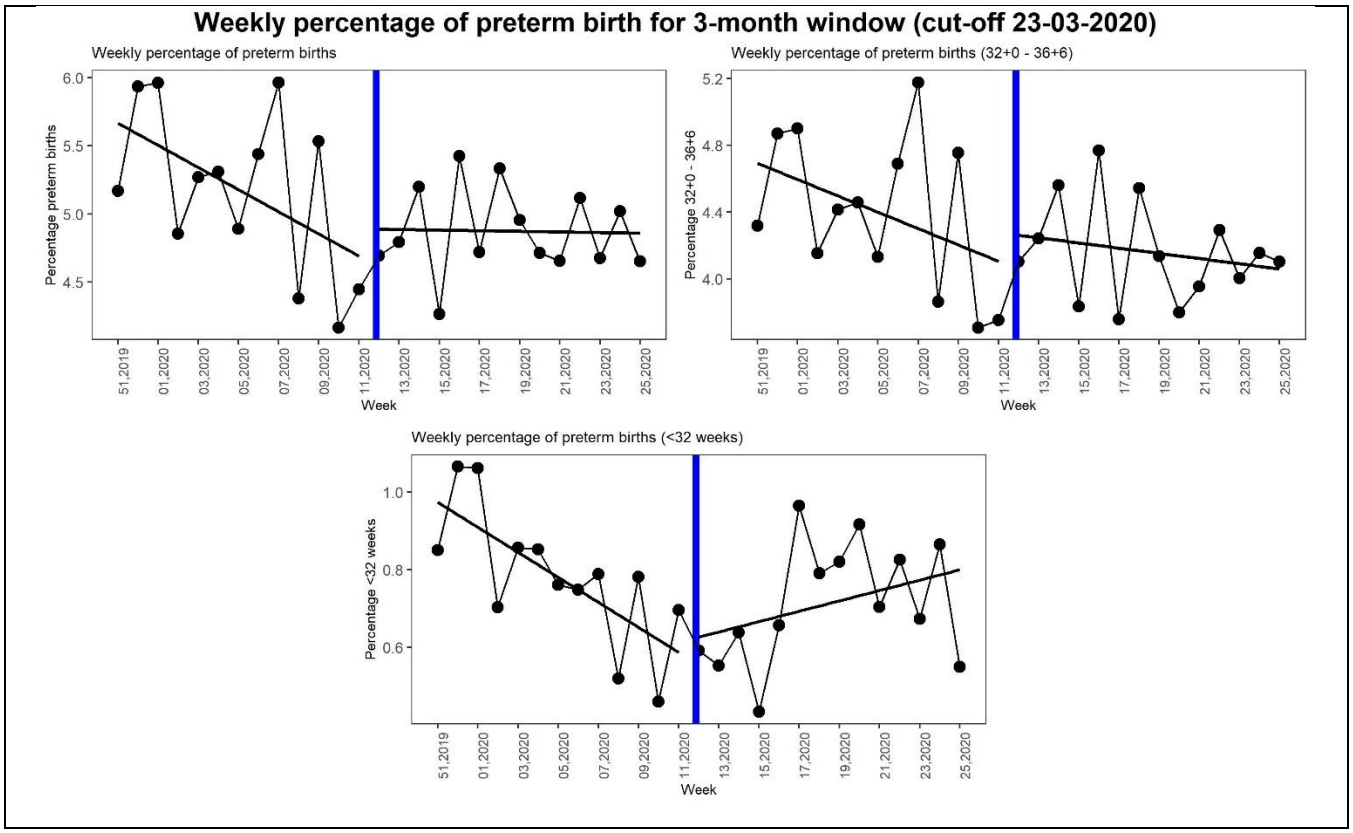
SUPPLEMENTAL FIGURE 9. WEEKLY PERCENTAGE OF PRETERM BIRTH FOR 2-MONTH WINDOW PLOTTED AGAINST ASSIGNMENT VARIABLE (WEEK OF BIRTH) TO SHOW DISCONTINUITY AT CUT-OFF VALUE (15-03-2020)



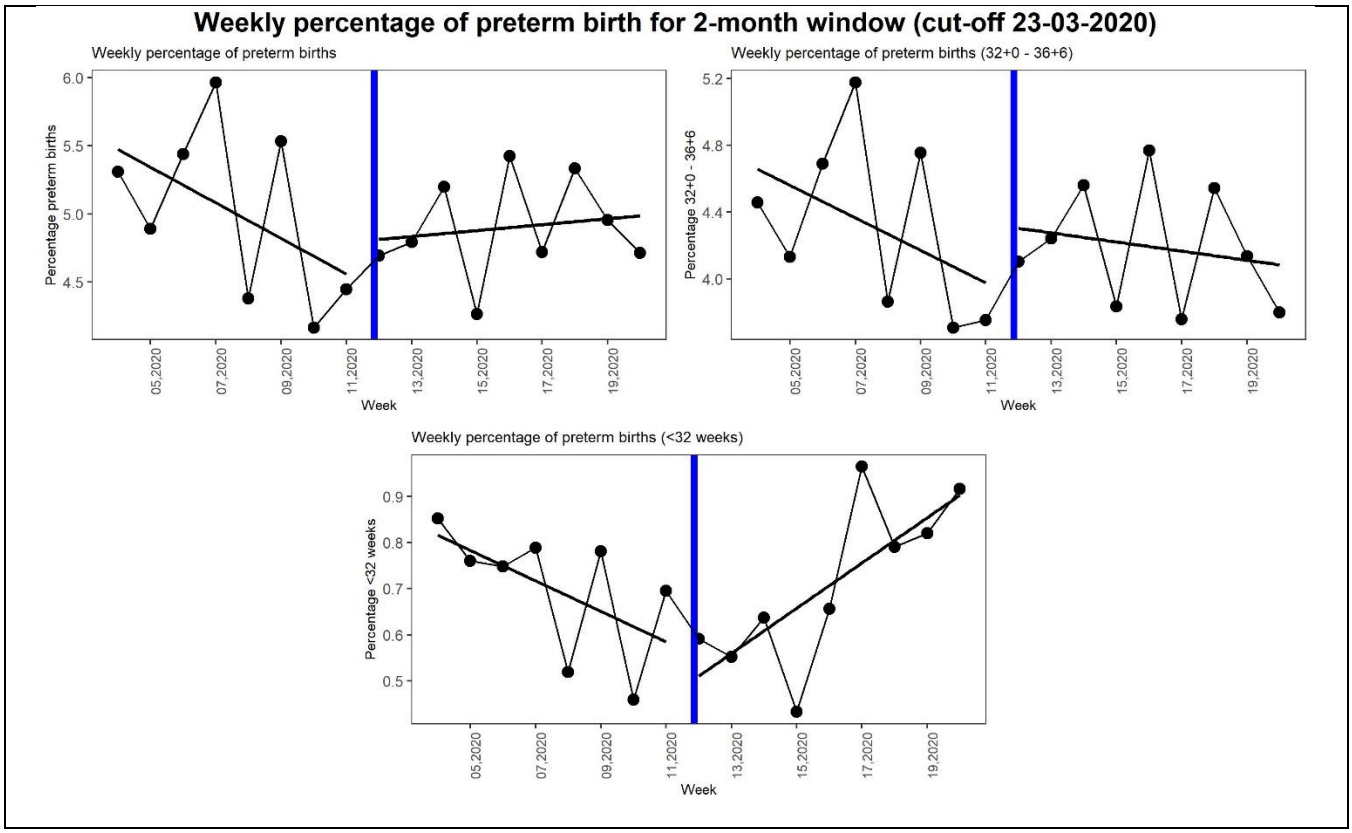
SUPPLEMENTAL FIGURE 10. WEEKLY PERCENTAGE OF PRETERM BIRTH FOR 1-MONTH WINDOW PLOTTED AGAINST ASSIGNMENT VARIABLE (WEEK OF BIRTH) TO SHOW DISCONTINUITY AT CUT-OFF VALUE (15-03-2020)



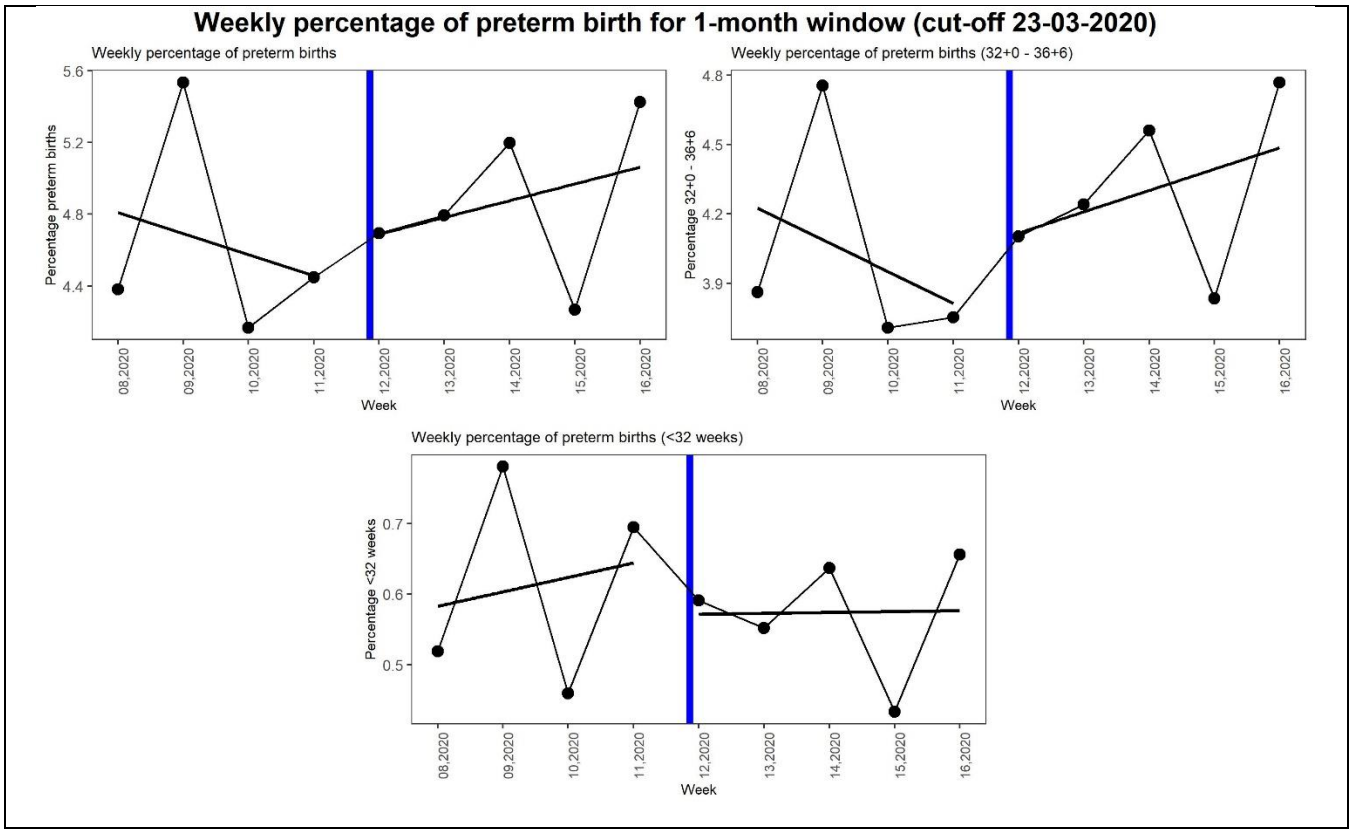
SUPPLEMENTAL FIGURE 11. WEEKLY PERCENTAGE OF PRETERM BIRTH FOR 4-MONTH WINDOW PLOTTED AGAINST ASSIGNMENT VARIABLE (WEEK OF BIRTH) TO SHOW DISCONTINUITY AT CUT-OFF VALUE (23-03-2020)



SUPPLEMENTAL FIGURE 12. WEEKLY PERCENTAGE OF PRETERM BIRTH FOR 3-MONTH WINDOW PLOTTED AGAINST ASSIGNMENT VARIABLE (WEEK OF BIRTH) TO SHOW DISCONTINUITY AT CUT-OFF VALUE (23-03-2020)



SUPPLEMENTAL FIGURE 13. WEEKLY PERCENTAGE OF PRETERM BIRTH FOR 2-MONTH WINDOW PLOTTED AGAINST ASSIGNMENT VARIABLE (WEEK OF BIRTH) TO SHOW DISCONTINUITY AT CUT-OFF VALUE (23-03-2020)



SUPPLEMENTAL FIGURE 14. WEEKLY PERCENTAGE OF PRETERM BIRTH FOR 1-MONTH WINDOW PLOTTED AGAINST ASSIGNMENT VARIABLE (WEEK OF BIRTH) TO SHOW DISCONTINUITY AT CUT-OFF VALUE (23-03-2020)

SUPPLEMENTAL TABLE 1: VALIDATION OF ANNUAL POPULATION CHARACTERISTICS AGAINST PERINED FOR SELECTED YEARS

Characteristic (n(%))	2011		2014		2017	
	Praeventis	Perined	Praeventis	Perined	Praeventis	Perined
Gestational age	**n=173,965**	**n=172,453**	**n=169,375**	**n=169,225**	**n=164,478**	**n=160,818**
24+0 – 31+6 weeks	1,223 (0.7)	1,512 (0.9)	1,236 (0.7)	1,515 (0.9)	1,139 (0.7)	1,345 (0.8)
32+0 – 36+6 weeks	8,081 (4.6)	8,221 (4.8)	7,772 (4.6)	7,883 (4.7)	7,218 (4.4)	7,363 (4.6)
37+0 – 41+6 weeks	161,070 (92.6)	157,565 (91.4)	157,523 (93.0)	154,998 (91.6)	153,196 (93.1)	149,493 (93.0)
≥42+0 weeks	3,107 (1.8)	3,022 (1.8)	2,285 (1.3)	2,213 (1.3)	2,287 (1.4)	2,316 (1.4)
missing	484 (0.3)	2,115 (1.2)	559 (0.3)	2,646 (1.6)	638 (0.4)	301 (0.2)
Birth weight[a]	**n=173,965**	**n=172,886**	**n=169,375**	**n=169,673**	**n=164,478**	**n=161,232**
<1500 grams	1,054 (0.6)	1,801 (1.1)	1,079 (0.6)	1,812 (1.0)	1,059 (0.6)	1,525 (1.0)
1500 – 2499 grams	6,299 (3.6)	6,613 (3.8)	6,462 (3.8)	6,787 (4.0)	5,918 (3.6)	5,993 (3.7)
2500 – 3499 grams	82,177 (47.2)	81,569 (47.2)	82,303 (48.6)	82,434 (48.6)	79,130 (48.1)	77,552 (48.1)
3500 – 3999 grams	58,131 (33.5)	57,252 (33.1)	55,803 (32.9)	55,267 (32.6)	55,247 (33.6)	53,837 (33.4)
4000 – 4499 grams	21,551 (12.4)	21,167 (12.2)	19,986 (11.8)	19,845 (11.7)	19,400 (11.8)	18,939 (11.7)
≥4500 grams	4,134 (2.4)	4,099 (2.4)	3,229 (1.9)	3,228 (1.9)	3,116 (1.9)	3,051 (1.9)
missing	437 (0.3)	385 (0.2)	513 (0.3)	300 (0.2)	608 (0.4)	335 (0.2)

Only singleton births at gestational ages ≥24+0 weeks are included in the comparisons; note that Perined data also include stillbirths. [a]For Perined the birth weight distribution includes births at gestational ages ≥22+0 weeks instead of ≥24+0 weeks.

SUPPLEMENTAL TABLE 2: IMPACT OF THE 9 MARCH COVID-19 MITIGATION MEASURES ON THE INCIDENCE OF PRETERM BIRTH: EFFECT MODIFICATION BY NEIGHBOURHOOD SOCIO-ECONOMIC STATUS

Variable	Time window around implementation			
	±1 month OR (95%CI)	±2 months OR (95%CI)	±3 months OR (95%CI)	±4 months OR (95%CI)
COVID-19 mitigation measures	0.74 (0.55–0.99)	0.74 (0.60–0.91)	0.85 (0.71–1.01)	0.87 (0.73–1.02)
SES				
High SES (≥p80)	REF	REF	REF	REF
Medium SES (p20-80)	1.10 (1.05–1.15)	1.13 (1.09–1.16)	1.11 (1.08–1.14)	1.12 (1.09–1.14)
Low SES (<p20)	1.08 (1.02–1.14)	1.11 (1.07–1.16)	1.10 (1.06–1.13)	1.12 (1.08–1.15)
COVID-19 mitigation measures × SES (interaction)				
High SES	REF	REF	REF	REF
Medium SES	1.16 (0.94–1.44)	1.07 (0.91–1.25)	1.01 (0.89–1.13)	0.98 (0.88–1.09)
Low SES	1.17 (0.90–1.52)	1.12 (0.92–1.35)	1.01 (0.87–1.18)	0.99 (0.87–1.13)

OR = odds ratio; CI = confidence interval; SES = socioeconomic status; REF = reference category
Note: the distribution of women across neighbourhood SES categories was similar before and after the lockdown: low SES: before 19.0%, after 18.9%; middle SES: before 61.0%, after 61.0%; high SES: before 20.1%, after 20.2%.

SUPPLEMENTAL TABLE 3: IMPACT OF THE 9 MARCH COVID-19 MITIGATION MEASURES ON THE INCIDENCE OF PRETERM BIRTH: EFFECT MODIFICATION BY SMALL-FOR-GESTATIONAL-AGE STATUS

Variable	Time window around implementation			
	±1 month OR (95%CI)	±2 months OR (95%CI)	±3 months OR (95%CI)	±4 months OR (95%CI)
COVID-19 mitigation measures	0.81 (0.63–1.03)	0.76 (0.64–0.90)	0.83 (0.71–0.96)	0.83 (0.72–0.96)
SGA status				
Non SGA	REF	REF	REF	REF
SGA	2.21 (2.11–2.31)	2.20 (2.13–2.27)	2.20 (2.14–2.26)	2.20 (2.15–2.24)
COVID-19 mitigation measures × SGA status (interaction)				
Non SGA	REF	REF	REF	REF
SGA	1.20 (0.99–1.45)	1.10 (0.95–1.27)	1.12 (0.99–1.26)	1.10 (0.99–1.22)

OR = odds ratio; CI = confidence interval; SGA = small for gestational age (i.e. birth weight <10th centile for gestational age and sex); REF = reference category

SUPPLEMENTAL TABLE 4: IMPACT OF THE 9 MARCH COVID-19 MITIGATION MEASURES ON THE INCIDENCE OF PRETERM BIRTH: EFFECT MODIFICATION BY NEONATAL SEX

Variable	Time window around implementation			
	±1 month OR (95%CI)	±2 months OR (95%CI)	±3 months OR (95%CI)	±4 months OR (95%CI)
COVID-19 mitigation measures	0.86 (0.67–1.11)	0.80 (0.67–0.95)	0.86 (0.73–1.00)	0.87 (0.75–1.01)
Sex				
Male	REF	REF	REF	REF
Female	0.87 (0.84–0.90)	0.86 (0.84–0.88)	0.85 (0.83–0.86)	0.85 (0.83–0.86)
COVID-19 mitigation measures × sex (interaction)				
Male	REF	REF	REF	REF
Female	0.92 (0.79–1.08)	0.93 (0.83–1.05)	0.97 (0.89–1.07)	0.95 (0.87–1.03)

OR = odds ratio; CI = confidence interval; REF = reference category

SUPPLEMENTAL TABLE 5: IMPACT OF THE 9 MARCH COVID-19 MITIGATION MEASURES ON THE INCIDENCE OF PRETERM BIRTH: CENSORING OF ONE OR TWO WEEKS PRIOR TO OR FOLLOWING THE MEASURES

Period of censoring	Time window around implementation			
	±1 month OR (95%CI)	±2 months OR (95%CI)	±3 months OR (95%CI)	±4 months OR (95%CI)
Two weeks prior to implementation	1.10 (0.71–1.70)	0.79 (0.63–0.99)	0.89 (0.73–1.07)	0.89 (0.74–1.07)
One week prior to implementation	0.83 (0.62–1.12)	0.80 (0.66–0.96)	0.88 (0.75–1.03)	0.87 (0.75–1.01)
One week following implementation	0.83 (0.64–1.07)	0.78 (0.65–0.93)	0.86 (0.73–1.00)	0.86 (0.74–0.99)
Two weeks following implementation	0.82 (0.63–1.07)	0.77 (0.64–0.93)	0.86 (0.73–1.01)	0.86 (0.73–1.00)

OR = odds ratio; CI = confidence interval