

Table S1. Covariate balance by combination oral contraceptive use within decile rank for exposure 12 - > 4 months before conception

Covariate	Propensity score decile rank																			
	1		2		3		4		5		6		7		8		9		10	
	Exposed (n=2,791) No Yes		Exposed (n=2,792) No Yes		Exposed (n=2,791) No Yes		Exposed (n=2,792) No Yes		Exposed (n=2,791) No Yes		Exposed (n=2,792) No Yes		Exposed (n=2,792) No Yes		Exposed (n=2,792) No Yes		Exposed (n=2,791) No Yes		Exposed (n=2,791) No Yes	
Maternal age (yrs)																				
14-19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.3	0.1	3.8	5.4
20-29	0.0	0.0	0.2	0.6	1.7	4.0	11.6	9.1	49.1	50.5	71.2	68.8	2.6	4.6	2.6	4.6	43.0	42.0	96.2	96.4
30-39	81.5	87.2	99.0	99.4	97.0	94.0	86.6	89.0	49.4	48.3	28.5	30.9	97.4	95.4	97.4	95.4	56.8	57.9	0.1	0.2
40-49	18.5	12.8	1.2	0.0	1.3	2.0	1.8	1.8	1.5	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maternal BMI (kg/m ²)																				
<18.5	3.8	4.3	3.3	2.9	3.6	5.5	2.6	3.2	2.3	2.8	1.5	1.7	5.7	5.5	5.7	5.5	5.6	5.1	0.5	0.8
18.5-24.9	62.9	65.0	66.1	55.4	65.1	55.3	66.4	64.4	63.0	57.7	59.9	61.5	70.3	71.9	70.3	71.9	72.5	73.0	65.0	61.1
25.0-29.9	21.1	20.5	20.3	24.6	21.5	24.6	20.2	23.3	25.1	29.7	27.8	24.1	16.0	15.8	16.0	15.8	14.3	16.5	26.8	30.1
≥30.0	12.2	10.3	10.2	17.1	9.8	14.6	10.8	9.1	9.4	9.8	10.9	12.8	8.0	6.8	8.0	6.8	7.6	5.4	7.7	8.0
Parity																				
0	0.6	0.0	1.2	0.0	1.4	2.0	1.9	1.8	2.8	4.7	28.1	30.3	100	100	100	100	100	100	100	100
1	36.5	34.2	45.9	56.6	60.9	56.3	71.5	69.9	81.2	79.2	69.0	68.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	44.8	47.9	41.2	30.9	31.1	35.2	22.8	24.7	13.9	14.5	2.5	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	13.5	11.1	9.7	10.9	4.9	5.5	2.9	2.7	1.2	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 or more	4.7	6.8	2.2	1.7	1.7	1.0	1.0	0.9	1.0	1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maternal education																				
More than 4 years of university	41.3	32.5	39.0	28.0	37.5	27.1	29.9	24.7	16.3	14.2	15.7	18.4	50.9	51.9	50.9	51.9	41.4	45.4	16.0	20.6
4 year university degree	29.9	24.8	36.8	40.0	39.1	35.7	45.0	44.8	52.7	44.8	42.1	34.8	29.6	30.6	29.6	30.6	36.6	36.2	48.4	50.8
3 years high school	11.7	20.5	10.1	13.7	10.0	13.1	11.3	12.8	13.9	16.7	14.4	15.3	9.9	9.8	9.9	9.8	10.4	9.9	15.2	14.5
Technical high school	8.0	8.6	7.3	6.9	6.1	10.1	8.4	10.5	11.5	15.8	21.0	23.0	4.3	3.8	4.3	3.8	4.5	4.0	10.5	7.5
1-2 years high school	4.9	9.4	3.5	6.9	3.7	8.0	3.0	3.7	3.0	5.4	4.1	5.1	2.1	0.8	2.1	0.8	2.8	1.3	4.5	2.0
9-year secondary	2.7	4.3	2.3	4.0	2.1	4.0	1.4	1.4	1.5	2.2	1.7	1.7	1.5	1.6	1.5	1.6	2.0	1.5	3.9	2.8
Other	1.6	0.0	1.1	0.6	1.4	2.0	1.1	2.3	1.1	1.0	0.9	1.7	1.7	1.6	1.7	1.6	2.3	1.8	1.6	2.0
Maternal smoking (at 17 weeks)																				
None	84.0	78.6	85.5	79.4	84.8	75.4	84.1	79.0	81.7	78.2	76.9	72.2	80.0	84.2	80.0	84.2	79.2	81.7	66.6	66.2
Quit	9.6	16.2	9.6	12.6	10.5	14.6	10.9	12.8	12.6	15.8	15.3	17.3	15.5	12.5	15.5	12.5	16.7	14.1	22.6	23.5
Daily	0.9	1.7	0.8	1.7	1.2	1.0	0.9	0.5	1.7	1.3	2.1	2.8	0.7	1.3	0.7	1.3	0.9	1.5	3.3	2.5
Sometimes	5.6	3.4	4.1	6.3	3.6	9.1	4.1	7.8	4.0	4.7	5.7	7.6	3.8	2.1	3.8	2.1	3.2	2.8	7.9	7.4

Table S2. Hormonal contraceptive use and weight for gestational age at birth by period of last use relative to conception, progestin type, and route of administration

Exposure	Small for gestational age (SGA)				Birthweight z-score	
	Exposed (n)	SGA (n)	OR (95% CI)	aOR ^a (95% CI)	β (95% CI) unadjusted	β (95% CI) adjusted ^a
None	23,421	605	referent	referent	referent	referent
0 - 12 weeks after						
Combination OC	1,062	42	1.55 (1.14, 2.13)	1.10 (0.78, 1.55)	0.20 (0.14, 0.27)	0.02 (-0.05, 0.09)
Other ^b	576	15	1.01 (0.60, 1.69)	1.02 (0.60, 1.73)	0.07 (-0.02, 0.17)	0.08 (0.01, 0.18)
1 - >0 months before						
Combination OC	4,660	142	1.19 (0.98, 1.43)	0.96 (0.80, 1.17)	0.15 (0.12, 0.19)	0.01 (-0.03, 0.04)
Progestin only OC	1,204	14	0.44 (0.26, 0.76)	0.57 (0.33, 0.97)	-0.09 (-0.16, -0.03)	-0.03 (-0.09, 0.03)
Vaginal ring	356	11	1.20 (0.66, 2.20)	0.99 (0.54, 1.81)	0.07 (-0.05, 0.18)	-0.09 (-0.20, 0.03)
Other ^b	245	3	0.47 (0.15, 1.46)	0.40 (0.13, 1.27)	0.09 (-0.05, 0.22)	-0.001 (-0.13, 0.13)
4 - >1 month before						
Combination OC	3,833	103	1.04 (0.84, 1.29)	0.82 (0.66, 1.02)	0.11 (0.07, 0.15)	-0.05 (-0.08, 0.01)
Progestin only OC	1,284	11	0.33 (0.18, 0.59)	0.41 (0.22, 0.75)	-0.10 (-0.16, -0.04)	-0.03 (-0.09, 0.03)
Vaginal ring	352	16	1.80 (1.08, 2.98)	1.48 (0.88, 2.49)	0.15 (0.03, 0.28)	0.01 (-0.11, 0.14)
Other ^b	271	6	0.85 (0.38, 1.93)	0.73 (0.32, 1.68)	0.08 (-0.06, 0.21)	0.004 (-0.14, 0.13)
12 - >4 months before						
Combination OC	4,633	147	1.24 (1.03, 1.48)	0.95 (0.79, 1.15)	0.12 (0.08, 0.15)	-0.05 (-0.09, -0.01)
Progestin only OC	1,795	33	0.71 (0.50, 1.01)	0.95 (0.66, 1.36)	-0.08 (-0.13, -0.03)	0.01 (-0.04, 0.06)
Vaginal ring	424	10	0.91 (0.48, 1.71)	0.76 (0.40, 1.42)	0.07 (-0.03, 0.17)	-0.06 (-0.16, 0.03)
Other ^b	618	9	0.56 (0.29, 1.08)	0.52 (0.26, 1.01)	0.01 (-0.08, 0.10)	-0.02 (-0.11, 0.06)

^aadjusted for parity, maternal education, maternal pre-pregnancy BMI, maternal smoking, and maternal age at birth

^bhormonal contraceptive types with <10 exposed cases collapsed into a single "other" category

Table S3. Hormonal contraceptive use and small for gestational age by period of last use relative to conception, progestin type, and route of administration

Exposure	Exposed (n)	SGA (n)	OR (95% CI)	aOR ^a (95% CI)
None	23,421	605	referent	referent
<i>0 - 12 weeks after</i>				
Combination OC				
drospirenone and EE	368	16	1.71 (1.03, 2.05)	1.24 (0.74, 2.08)
levonorgestrel and EE	545	19	1.36 (0.86, 2.17)	0.96 (0.59, 1.56)
Other ^b	725	22	1.18 (0.77, 1.82)	1.08 (0.69, 1.69)
<i>1 - >0 months before</i>				
Combination OC				
desogestrel and EE	295	10	1.32 (0.70, 2.50)	1.12 (0.59, 2.12)
drospirenone and EE	1,472	36	0.95 (0.67, 1.33)	0.75 (0.53, 1.05)
levonorgestrel and EE	2,521	82	1.27 (1.00, 1.60)	1.04 (0.82, 1.32)
norethisterone and EE	372	14	1.47 (0.86, 2.53)	1.24 (0.72, 2.13)
Vaginal ring				
etonogestrel and EE	356	11	1.20 (0.66, 2.20)	0.99 (0.54, 1.81)
Other ^b	1,449	17	0.45 (0.28, 0.73)	0.53 (0.32, 0.86)
<i>4 - > 1 month before</i>				
Combination OC				
drospirenone and EE	1,227	35	1.11 (0.78, 1.56)	0.88 (0.62, 1.25)
levonorgestrel and EE	2,107	61	1.12 (0.86, 1.47)	0.89 (0.68, 1.17)
Vaginal ring				
etonogestrel and EE	352	16	1.80 (1.08, 2.98)	1.48 (0.88, 2.49)
Other ^b	2,054	24	0.45 (0.30, 0.67)	0.46 (0.31, 0.70)
<i>12 - > 4 months before</i>				
Combination OC				
desogestrel and EE	215	12	2.23 (1.24, 4.01)	1.73 (0.96, 3.12)
drospirenone and EE	1,475	43	1.13 (0.83, 1.55)	0.87 (0.63, 1.19)
levonorgestrel and EE	2,605	82	1.23 (0.97, 1.55)	0.95 (0.74, 1.21)
norethisterone and EE	338	10	1.15 (0.61, 2.17)	0.89 (0.47, 1.68)
Progestin only OC				
desogestrel	1,031	18	0.67 (0.42, 1.08)	0.88 (0.55, 1.42)
norethisterone	640	12	0.72 (0.40, 1.28)	1.01 (0.56, 1.81)
Vaginal ring				
etonogestrel and EE	424	10	0.91 (0.48, 1.71)	0.76 (0.40, 1.42)
Other ^b	742	12	0.62 (0.35, 1.10)	0.61 (0.34, 1.08)

^a adjusted for parity, maternal education, maternal pre-pregnancy BMI, maternal smoking, and maternal age at birth

^b hormonal contraceptive types with <10 exposed cases collapsed into a single "other" category

Table S4. Sensitivity analysis for combination oral contraceptive use and preterm birth with restriction to nulliparous pregnancies

	0 - 12 weeks after conception (n=9,761)	1 - >0 months before conception (n=12,565)	4 - > 1 month before conception (n=12,127)	12 - >4 months before conception (n=12,990)
Exposure	aOR ^a (95% CI)	aOR ^a (95% CI)	aOR ^a (95% CI)	aOR ^a (95% CI)
None	referent	referent	referent	referent
Combination OC	1.39 (1.02, 1.90)	1.22 (1.02, 1.47)	1.39 (1.15, 1.68)	1.16 (0.97, 1.39)
Progestin only OC	2.21 (1.03, 4.73)	0.80 (0.41, 1.56)	1.26 (0.71, 2.23)	1.18 (0.68, 2.04)
Vaginal ring	^c	0.53 (0.24, 1.21)	0.82 (0.42, 1.62)	0.63 (0.31, 1.27)
Transdermal	^c	^c	^c	0.73 (0.32, 1.67)
Injectable	^c	^c	^c	1.97 (0.89, 4.35)
Other ^b	0.49 (0.15, 1.59)	0.49 (0.15, 1.55)	0.71 (0.29, 1.74)	^c

^a adjusted for maternal education, maternal pre-pregnancy BMI, maternal smoking, and maternal age at birth

^b hormonal contraceptive types with <10 exposed cases collapsed into a single "other" category

^c too few to estimate association

Table S5. Sensitivity analysis for combination oral contraceptive and preterm birth with vaginal ring users as the comparator group

Exposure	1 - >0 months before (n=5,099)		4 – >1 month before (n=4,185)		12 - >4 months before (n=5,057)	
	OR (95% CI)	aOR ^a (95% CI)	OR (95% CI)	aOR ^a (95% CI)	OR (95% CI)	aOR ^a (95% CI)
Vaginal ring	referent	referent	referent	referent	referent	referent
Combination OC	1.54 (0.89, 2.67)	1.55 (0.89, 2.71)	1.67 (0.92, 3.01)	1.72 (0.94, 3.15)	1.88 (1.05, 3.39)	1.78 (0.99, 3.21)

^aadjusted for parity, maternal education, maternal pre-pregnancy BMI, maternal smoking, and maternal age at birth

Table S6. Sensitivity analysis for hormonal oral contraceptive use and preterm birth with restriction to unplanned pregnancies

0 - 12 weeks after conception (n=8,753)	
Exposure	aOR ^a (95% CI)
None	referent
Combination OC	1.22 (0.91, 1.63)
Progestin only OC	1.08 (0.65, 1.78)
None	referent
Combination OC	^c
drospirenone and EE	1.08 (0.68, 1.72)
levonorgestrel and EE	1.11 (0.75, 1.65)
norethisterone and EE	3.00 (1.53, 5.83)
Progestin only OC	
norethiserone	1.69 (0.89, 3.19)

^a adjusted for maternal education, maternal pre-pregnancy BMI, maternal smoking, parity, and maternal age at birth

Table S7. Sensitivity analysis for association between combination oral contraceptive use and preterm birth with propensity score analysis approach^a

	0 - 12 weeks after (n=24,318) ^b	1 - >0 months before (n=27,978) ^b	4 - >1 month before (n=27,242) ^b	12 - >4 months before (n=27,915) ^b
Exposure	aOR ^a (95% CI)	aOR ^a (95% CI)	aOR ^a (95% CI)	aOR ^a (95% CI)
None	referent	referent	referent	referent
Combination OC	1.35 (1.02, 1.77)	1.17 (1.00, 1.37)	1.34 (1.14, 1.57)	1.24 (1.06, 1.45)

^adoubly robust approach with generalized estimation equation models including both the predicted probability of combination oral contraceptive use (modeled as an indicator variable for decile rank) and with adjustment for parity, maternal education, maternal pre-pregnancy BMI, maternal smoking, and maternal age at birth

^bstudy population after trimming for non-positivity