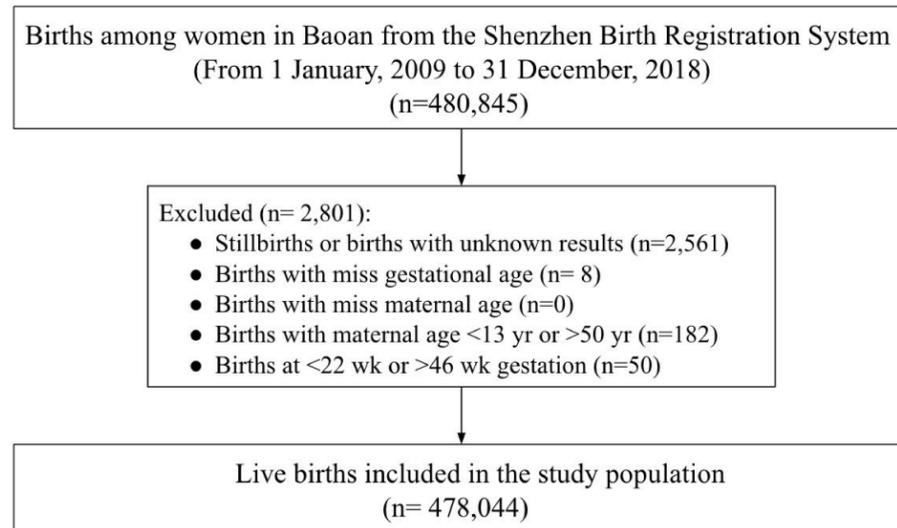


Supplementary Materials

Ten-year time trends in preterm birth during a sociodemographic transition period: a retrospective cohort study in Shenzhen, China

Supplementary Figure 1. Flowchart of Study Population



Supplementary Table 1. Temporal Trends in Preterm Birth Rate (%) in Baoan, Shenzhen, 2009 - 2018

	Year									
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Overall Preterm Birth Rate	5.5	5.8	5.7	5.8	5.6	5.5	5.7	6.0	6.4	6.2
PROM-PTB	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1
S-PTB	3.3	3.6	3.2	3.3	3.1	3.1	3.1	3.0	2.9	2.7
MI-PTB	2.0	2.1	2.3	2.4	2.5	2.4	2.5	2.9	3.4	3.4
Gestational age(week)										
< 28	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
28 -< 32	0.6	0.7	0.6	0.6	0.6	0.5	0.5	0.6	0.5	0.6
32 -< 37	4.9	5.1	5.0	5.2	5.0	5.0	5.1	5.3	5.7	5.5
Maternal age(year)										
≤ 20	7.0	7.7	8.2	8.6	8.4	7.0	8.9	7.7	9.0	8.1
21-35	5.2	5.5	5.3	5.4	5.2	5.2	5.2	5.7	6.0	5.7
≥ 36	8.2	7.3	7.9	8.3	8.2	8.4	8.5	9.1	8.8	8.9
Maternal education										
Primary school and below	5.3	5.5	5.9	6.3	6.9	6.2	6.7	8.4	7.4	8.7
Secondary and high school	5.8	6.0	5.6	5.9	5.6	5.7	5.7	6.4	6.6	6.4
College and above	4.6	4.8	5.6	5.1	5.4	4.9	5.4	5.2	5.8	5.7
Immigrant										
No	5.9	6.1	6.1	6.0	6.0	5.8	6.0	6.1	6.2	5.9
Yes	5.5	5.7	5.6	5.7	5.6	5.5	5.6	6.0	6.4	6.2
Parity										
0	5.9	5.8	6.2	5.8	5.9	5.7	6.1	6.3	7.0	6.6
≥ 1	5.0	5.7	5.1	5.7	5.3	5.4	5.2	5.9	5.92	5.9
Multiple pregnancy										
No	4.8	5.2	5.0	5.1	4.9	4.7	4.8	5.0	5.2	4.9
Yes	42.2	38.3	43.8	46.4	41.4	44.3	41.1	46.5	50.7	50.7
Delivery mode										
Vaginal delivery	5.2	5.5	5.0	5.1	4.8	4.6	4.6	4.5	4.5	4.1
Labour induction/ Caesarean section	6.3	6.3	6.8	6.9	7.0	7.4	7.9	9.1	9.7	10.0
Fertility treatment										
No	5.5	5.8	5.7	5.8	5.6	5.5	5.5	5.9	6.3	6.0
Yes	^a	^b	^b	^b	^b	26.0	23.8	26.4	24.1	30.3

First visit trimester										
First trimester	5.2	5.5	5.2	5.5	5.5	5.4	5.4	5.9	6.3	6.2
Second trimester	5.6	5.7	6.5	6.6	6.5	6.7	6.2	6.8	7.1	5.5
Third trimester	5.9	6.3	5.9	6.2	6.2	6.9	7.8	7.0	7.5	9.6
Prenatal care utilisation rate^a										
< 50%	5.5	6.1	5.9	6.5	6.3	6.7	7.6	7.7	8.8	10.3
50% - < 110%	4.8	5.0	4.8	4.8	4.7	4.8	4.6	4.9	5.4	5.2
≥ 110%	10.6	9.2	10.1	9.7	10.4	8.2	8.7	9.1	7.5	6.9
Infant gender										
Female	5.2	5.4	5.3	5.2	5.0	5.2	5.2	5.4	5.7	5.5
Male	5.8	6.2	6.0	6.2	6.1	5.8	6.0	6.5	6.9	6.7

a. Prenatal care utilisation rate is defined as the ratio between the actual number of visits and the recommended number.

b. During 2009-2013, there were no records of fertility treatments in the database.

Supplementary Table 2. Sensitivity Analysis of Temporal Trends for Overall Preterm Birth Rates in Baoan, Shenzhen, 2009 - 2018

Year	Preterm birth rate(%)	Risk Ratio(95%CI)	P Value
2009	5.5	Reference	
2010	5.8	1.0(1.0,1.0)	0.104
2011	5.7	1.0(1.0,1.0)	0.493
2012	5.8	1.0(1.0,1.0)	0.148
2013	5.6	1.0(1.0,1.0)	0.626
2014	5.5	1.0(1.0,1.0)	0.986
2015	5.7	1.0(1.0,1.0)	0.494
2016	6.0	1.0(1.0,1.0)	0.002
2017	6.4	1.0(1.0,1.0)	0.000
2018	6.2	1.0(1.0,1.0)	0.000

Supplementary Table 3. Temporal Trends in the Distribution Percentage (%) of Sociodemographic Factors in Baoan, Shenzhen, 2009 - 2018^a

	Year									
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
All live births	38590	41912	46617	54957	46861	50063	45872	51328	52823	49021
Gestational age(week)										
< 28	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
28 -< 32	0.6	0.7	0.6	0.6	0.6	0.5	0.5	0.6	0.5	0.6
32 -< 37	4.9	5.1	5.0	5.2	5.0	5.0	5.1	5.3	5.7	5.5
≥ 37	94.5	94.2	94.4	94.2	94.4	94.5	94.4	94.0	93.6	93.8
Maternal age(year)										
≤ 20	6.8	6.9	6.4	5.4	5.5	5.1	4.7	3.4	2.8	2.3
21-35	87.0	86.6	87.3	88.2	87.6	88.0	87.2	87.9	85.6	85.8
≥ 36	6.2	6.5	6.3	6.4	6.9	6.9	8.1	8.7	11.6	11.9
Maternal education										
Primary school and below	17.6	7.6	2.6	2.1	1.9	1.6	1.6	1.4	1.1	1.2
Secondary and high school	70.2	77.2	84.4	80.9	81.4	77.2	74.2	68.0	64.6	58.9
College and above	12.2	15.2	13.0	17.0	16.7	21.2	24.2	30.6	34.4	39.9
Immigrant										
No	4.2	4.5	4.1	5.7	7.7	9.7	11.0	16.3	21.7	22.8
Yes	95.8	95.6	96.0	94.3	92.4	90.3	89.0	83.7	78.3	77.2

Parity										
0	60.5	56.3	49.1	47.5	47.1	46.7	45.2	42.2	38.5	40.5
≥ 1	39.5	43.8	50.9	52.5	53.0	53.3	54.8	57.8	61.5	59.5
Multiple pregnancy										
No	98.1	98.3	98.2	98.3	98.0	97.9	97.7	97.5	97.5	97.3
Yes	1.9	1.7	1.8	1.7	2.1	2.1	2.3	2.5	2.5	2.7
Delivery mode										
Vaginal deliveries	64.8	65.5	64.8	64.9	64.5	67.0	67.9	67.0	64.2	65.2
Labor induction/ Caesarean section	35.2	34.5	35.	35.1	35.5	33.0	32.1	33.0	35.8	34.8
Fertility treatment										
No	100.0	100.0	100.0	100.0	100.0	99.9	99.4	99.2	99.5	99.3
Yes	0.0	0.0	0.0	0.0	0.0	0.1	0.7	0.8	0.5	0.7
First visit trimester										
First trimester	39.9	44.6	52.2	68.7	83.	83.4	84.2	84.0	88.7	91.7
Second trimester	26.1	24.9	21.4	14.5	9.4	10.0	10.0	11.8	8.3	6.8
Third trimester	34.0	30.5	26.5	16.8	7.4	6.6	5.9	4.2	3.1	1.5
Prenatal care utilisation rate^b										
< 50%	63.2	54.1	46.8	31.0	17.3	16.4	15.1	11.7	9.1	4.1
50% - <110%	31.3	40.5	47.3	60.4	71.6	70.9	70.7	69.0	59.7	51.1
≥ 110%	5.4	5.4	5.9	8.7	11.0	12.7	14.2	19.3	31.2	44.8
Infant Gender										
Female	45.0	45.4	45.9	45.8	46.3	45.6	46.1	46.5	46.4	46.2
Male	55.0	54.6	54.1	54.2	53.7	54.4	53.9	53.5	53.6	53.8

a. The distribution percentage (%) for each category is the number of cases divided by the total number of preterm births.

b. Prenatal care utilisation rate is defined as the ratio between the actual number of visits and the recommended number.

Supplementary Table 4. Analysis of Sociodemographic Factors Contributing to Variations of Preterm Birth Rate in Baoan, Shenzhen, 2009-2018^a

	Overall PTB		PROM-PTB		S-PTB		MI-PTB	
	AOR	Rate change	AOR	Rate change	AOR	Rate change	AOR	Rate change
Maternal age(year)								
≤20	1.5		1.2		2.2		0.6	
21-35	Reference	0.03%	Reference	0.00%	Reference	-0.09%	Reference	0.15%
≥36	1.5		1.3		1.0		1.9	
Maternal education								
Primary school and below	1.4		1.5		1.8		1.1	
Secondary and high school	1.3	-0.22%	1.0	-0.00%	1.4	-0.14%	1.1	-0.05%
College and above	Reference		Reference		Reference		Reference	
Parity								
0	1.1	-0.06%	1.7	-0.00%	1.2	-0.05%	1.0	0.01%
≥ 1	Reference		Reference		Reference		Reference	
Multiple pregnancy								
No	Reference		Reference		Reference		Reference	
Yes	18.3	0.28%	6.5	0.00%	2.9	0.02%	29.9	0.17%
Prenatal care utilisation rate^b								
< 50%	1.3		0.6		1.4		1.2	
50% - <110%	0.7	-0.45%	0.7	0.01%	0.8	-0.27%	0.7	-0.14%
≥ 110%	Reference		Reference		Reference		Reference	
Infant Gender								
Female	Reference		Reference		Reference		Reference	
Male	1.3	-0.01%	1.5	0.00%	1.3	-0.01%	1.2	-0.00%
Projected Increase	-	0.24%	-	-0.00%	-	-0.04%	-	0.22%

- a. 131,787 live births after the policy were included in the logistic regression model.
 b. Prenatal care utilisation rate is defined as the ratio between the actual number of visits and the recommended number.
 c. The distribution percentage for each category is the number of cases divided by the total number of preterm births.
 d. AOR: adjusted odds ratio
 e. AFp: Attributable risk fraction for the population.
 f. Preterm birth rate change is calculated by multiplying AFp with the preterm birth rate after the policy and subtract the result for before the policy.

Supplementary Table 5. Comparisons of Preterm Birth Rates and Risk Factor Distribution Percentages in Baoan, Shenzhen, 2003-2018^a

	Distribution percentage(%) ^c		Preterm birth rate(%)	
	2003-2012 ^c	2009-2018	2003-2012 ^c	2009-2018
Overall Preterm Birth				
PROM-PTB	-		0.54	0.08
S-PTB	-		2.9	3.1
MI-PTB	-		2.2	2.6
Gestational age(week)				
<28 weeks	10.3	1.1	0.6	0.1
28-<32 weeks	12.8	9.7	0.7	0.6
32-<37 weeks	76.9	89.2	4.3	5.2
Maternal age(year)				
≤20	5.9	4.8	7.0	8.0
21-35	88.8	87.2	5.4	5.5
≥36	5.3	8.0	8.3	8.5
Maternal education				
Less than high school	43.3	34.6	5.7	5.8
High school and college	36.0	55.2	5.8	5.9
Bachelor	19.0	8.9	5.2	5.3
Postgraduate	1.7	1.4	5.4	4.7
Parity				
0	62.1	46.8	5.8	6.1
≥ 1	37.9	53.2	5.4	5.6
Prenatal care utilisation rate^b				
< 50%	45.9	25.5	7.1	6.4
50% - <110%	39.9	58.1	5.3	4.9
≥ 110%	14.2	16.4	1.9	8.2
Infant Gender				
Female	45.7	46.0	5.3	5.3
Male	54.3	54.1	6.0	6.3

a. Li C, Liang Z, Bloom MS, et al. Temporal trends of preterm birth in Shenzhen, China: a retrospective study. *Reprod Health* 2018;15(1):47.

b. Prenatal care utilisation rate is defined as the ratio between the actual number of visits and the recommended number.

c. The distribution percentage for each category is the number of cases divided by the total number of preterm births.