

Appendix 8: Restrictive population definition, demographics and analysis

The restrictive population was defined as follows:

1. Age <40 years
2. BMI >18.5 to <30 kg/m²
3. Non smoker
4. No cardiac disease
5. No respiratory disease
6. No renal disease
7. No hepatic disease
8. No gastrointestinal disease
9. No endocrine disease
10. No pre-gestational diabetes
11. No hematological disease
12. No history of venous thrombo-embolism
13. No active malignancy
14. No severe maternal conditions (measures were excluded following the time stamp of diagnosis)

Applying the “restrictive” population definitions reduced the cohort to 595/1041 women. Delivery information was unavailable for 13 of these women, who were either lost to follow-up or discontinued participation during the study period. Within this group, 12 women provided data at 12 weeks, 7 at 24 weeks, 6 at 28 weeks and 1 at 32 weeks’ gestation, beyond which they no longer participated. Delivery information was available for 582 women within the restrictive cohort, of whom a further 2 withdrew consent during the study period.

Table A8.1: Baseline maternal characteristics for restrictive, excluded and total pragmatic populations. Values are mean \pm SD for continuous variables, and number (percentage) for categorical values. BMI= Body Mass Index (kg/m^2); GA= Gestational Age. *defined as Hb <110 g/L, [†] unmedicated, ^{††}(non-ischaemic non- congenital).

<i>Maternal baseline characteristics</i>	Included in restricted population N=595	Excluded from restricted population N=446	Total N=1041
Maternal age (years) \pm SD	31.5 \pm 3.9	31.5 \pm 5.9	31.5 \pm 4.9
Maternal weight (kg) \pm SD	64.3 \pm 9.4	73.6 \pm 16.6	68.3 \pm 13.9
Maternal BMI (kg/m^2) \pm SD	23.4 \pm 3.0	26.9 \pm 5.7	24.9 \pm 4.7
BMI category	427 (71.2)	184 (41.3)	611 (58.7)
- Normal (18.5-24.9 kg/m^2) (%)			
- Overweight (25.0-29.9 kg/m^2) (%)	168 (28.2)	117 (26.2)	285 (27.4)
- Obese (≥ 30 kg/m^2) (%)	0	145 (32.5)	145 (13.9)
GA at first visit (weeks) \pm SD	13.1 \pm 2.4	13.1 \pm 2.4	13.1 \pm 2.4
Nulliparous (%)	276 (46.4)	184 (41.3)	460 (44.2)
Ethnicity:	511 (85.9)	378 (84.8)	889 (85.4)
- White (%)			
- Asian (%)	21 (3.5)	31 (7.0)	52 (5.0)
- African/Caribbean (%)	10 (1.7)	13 (2.9)	23 (2.2)

Green LJ, Mackillop LH, Salvi D, Pullon R, Loerup L, Mossop J et al. Gestation-specific vital sign reference ranges in pregnancy. *Obstet Gynecol* 2020;135.

The authors provided this information as a supplement to their article.

©2020 American College of Obstetricians and Gynecologists.

- Mixed (%)	11 (1.8)	7 (1.6)	18 (1.7)
- Other (%)	42 (7.1)	17 (3.8)	59 (5.7)
Smoker (%)	0	79 (17.7)	79 (7.6)
Anemia* (%)	3 (0.5)	4 (0.9)	7 (0.7)
Pre-gestational diabetes (%)	0	6 (1.3)	6 (0.6)
Pre-existing hypertension [†] (%)	0	17 (3.8)	17 (1.6)
Cardiac disease ^{††} (%)	0	12 (2.7)	12 (1.2)
Pre-existing renal disease (%)	0	24 (5.4)	24 (2.3)

In the restrictive group, systolic blood pressure decreased from 12 weeks: median (95% CI) 113 (112 to 114) mmHg to reach its nadir of 112 (111 to 113) mmHg at 18.4 weeks, a change of -1 (-3 to 0) mmHg. Systolic blood pressure then rose progressively from 20 weeks' gestation to a maximum of median (95% CI) 119 (118 to 120) mmHg at 40 weeks, a difference (95% CI) of 7 (5 to 9) mmHg from minimum to maximum systolic BP.

Diastolic blood pressure decreased from 12 weeks: median (95% CI) 70 (69 to 70) mmHg to reach its nadir of 68 (67 to 69) mmHg at 19.5 weeks, a change (95% CI) of -2 (-3 to -1) mmHg. Diastolic blood pressure subsequently increased to a maximum of median (95% CI) 77 (76 to 78) mmHg at 40 weeks, a difference (95% CI) of 9 (8 to 11) mmHg from minimum to maximum diastolic BP.

Table A8.2: Smoothed centiles for systolic blood pressure and diastolic blood pressure (mmHg) for restrictive cohort according to gestational age for 3rd, 10th, 50th, 90th and 97th centiles (95% CI).

Gestational age (weeks)	Centiles for Systolic Blood Pressure (95% CI)				
	3rd	10th	50th	90th	97th
12	94.9 (93.4 - 96.3)	100.7 (99.8 - 101.7)	113.2 (112.1 - 114.3)	127.1 (125.7 - 128.5)	134.9 (133.1 - 136.7)
14	94.7 (92.8 - 96.7)	100.4 (99.5 - 101.2)	112.6 (111.8 - 113.4)	126.2 (124.7 - 127.8)	133.6 (130.1 - 137.1)
16	94.7 (93.5 - 96)	100.1 (99.3 - 101)	112.2 (111.6 - 112.9)	125.7 (124.6 - 126.8)	132.9 (131.2 - 134.5)
18	94.8 (93.8 - 95.8)	100.1 (99.3 - 100.9)	112.1 (111.4 - 112.7)	125.5 (124.5 - 126.5)	132.5 (131 - 133.9)
20	95 (94.1 - 95.9)	100.2 (99.5 - 100.9)	112.1 (111.4 - 112.8)	125.5 (124.5 - 126.5)	132.4 (131 - 133.9)
22	95.3 (93.7 - 96.8)	100.4 (99.6 - 101.3)	112.3 (111.5 - 113.1)	125.7 (124.5 - 126.9)	132.6 (130.2 - 135)
24	95.5 (94.6 - 96.5)	100.7 (99.9 - 101.5)	112.6 (111.8 - 113.3)	125.9 (124.9 - 126.9)	132.8 (131.2 - 134.4)
26	95.8 (94.8 - 96.8)	100.9 (100.1 - 101.8)	112.8 (112.2 - 113.4)	126.2 (125.4 - 127)	133.1 (131.8 - 134.3)
28	96.1 (95.1 - 97.1)	101.2 (100.4 - 102)	113.1 (112.5 - 113.6)	126.5 (125.8 - 127.2)	133.4 (132.3 - 134.4)
30	96.4 (95.4 - 97.4)	101.5 (100.7 - 102.3)	113.4 (112.8 - 114)	126.8 (126.1 - 127.6)	133.8 (132.7 - 134.8)
32	96.9 (95.8 - 98)	102 (101.2 - 102.8)	113.9 (113.3 - 114.6)	127.5 (126.6 - 128.3)	134.4 (133.1 - 135.7)
34	97.7 (96.6 - 98.8)	102.8 (102 - 103.6)	114.8 (114.2 - 115.4)	128.4 (127.4 - 129.4)	135.5 (134 - 136.9)
36	98.7 (97.7 - 99.7)	103.9 (103.1 - 104.6)	116 (115.3 - 116.7)	129.8 (128.7 - 130.8)	136.9 (135.4 - 138.3)
38	99.9 (99 - 100.9)	105.1 (104.3 - 106)	117.4 (116.4 - 118.4)	131.4 (130.1 - 132.6)	138.6 (136.9 - 140.2)
40	101.3 (99.7 - 102.9)	106.5 (105.1 - 108)	118.9 (117.6 - 120.3)	133.1 (131.2 - 135)	140.4 (137.8 - 143)

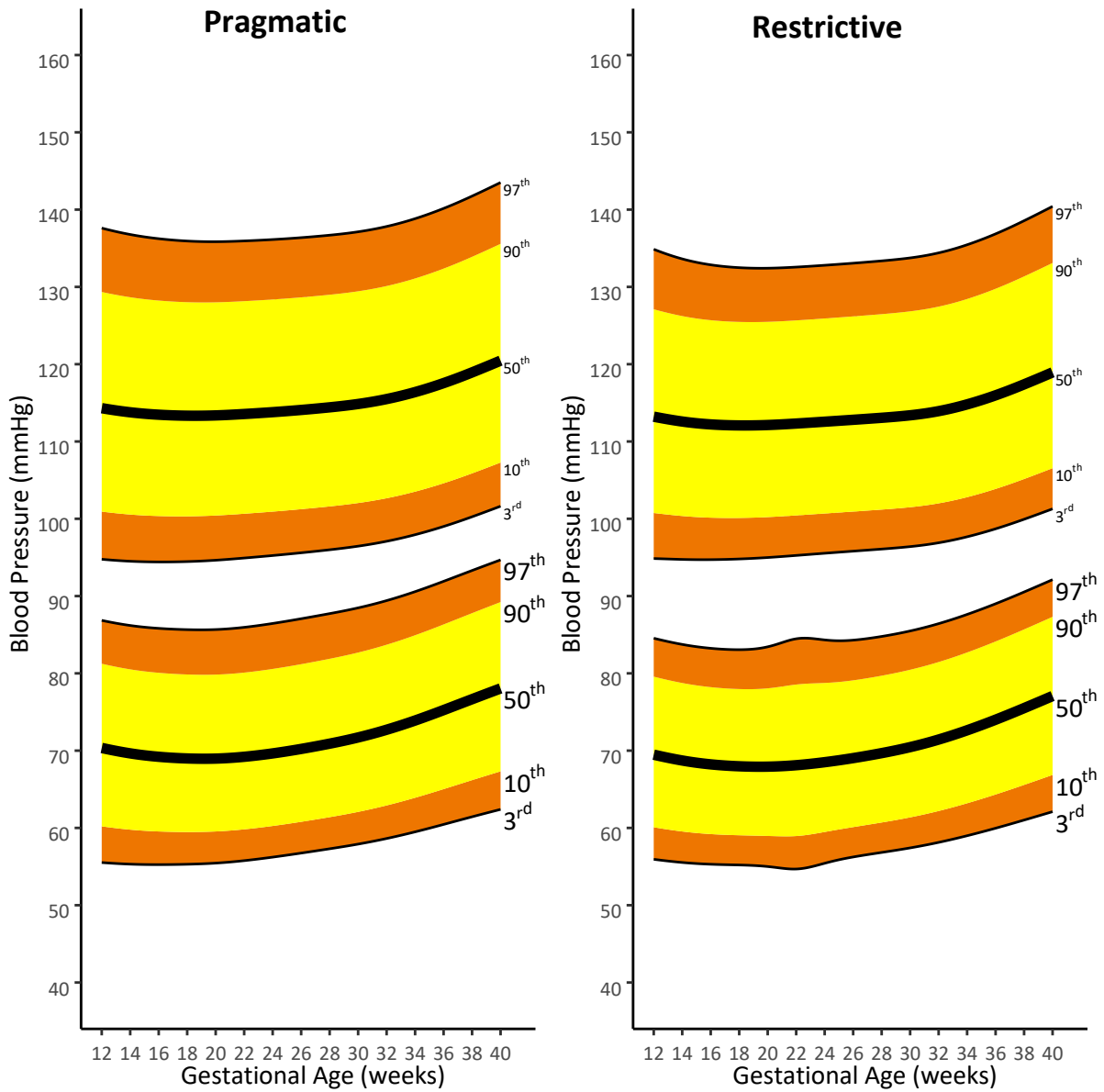
Gestational age (weeks)	Centiles for Diastolic Blood Pressure (95% CI)				
	3rd	10th	50th	90th	97th
12	55.9 (54.8 - 57)	60.1 (59.3 - 60.9)	69.5 (68.7 - 70.2)	79.6 (78.6 - 80.5)	84.5 (83.2 - 85.9)
14	55.5 (54.5 - 56.5)	59.5 (58.8 - 60.3)	68.7 (68.1 - 69.4)	78.8 (77.8 - 79.7)	83.7 (82.4 - 85.1)
16	55.3 (54.4 - 56.2)	59.2 (58.5 - 59.9)	68.2 (67.7 - 68.8)	78.2 (77.3 - 79.1)	83.2 (82.1 - 84.4)
18	55.2 (54.3 - 56.1)	59.1 (58.4 - 59.7)	68 (67.4 - 68.6)	78 (77.1 - 78.8)	83.1 (82 - 84.2)
20	55 (54.1 - 55.9)	59 (58.3 - 59.6)	67.9 (67.4 - 68.5)	78.1 (77.3 - 78.8)	83.4 (82.3 - 84.6)
22	54.7 (51.2 - 58.1)	59 (57.6 - 60.3)	68.1 (67.6 - 68.6)	78.6 (76.9 - 80.2)	84.5 (79.2 - 89.7)
24	55.4 (54.5 - 56.3)	59.5 (58.9 - 60.1)	68.5 (68 - 69.1)	78.8 (78.1 - 79.5)	84.3 (83.2 - 85.5)
26	56.2 (55.4 - 57)	60.1 (59.5 - 60.7)	69 (68.5 - 69.6)	79.1 (78.4 - 79.8)	84.3 (83.3 - 85.3)
28	56.8 (56 - 57.6)	60.7 (60.1 - 61.3)	69.7 (69.1 - 70.2)	79.7 (79 - 80.4)	84.8 (83.8 - 85.7)
30	57.4 (56.6 - 58.3)	61.4 (60.7 - 62)	70.5 (69.9 - 71)	80.5 (79.8 - 81.1)	85.5 (84.5 - 86.4)
32	58.1 (56.7 - 59.6)	62.2 (61.3 - 63.1)	71.4 (70.8 - 72)	81.5 (80.8 - 82.1)	86.4 (85.1 - 87.7)
34	59 (58 - 60)	63.2 (62.5 - 63.9)	72.6 (72.1 - 73.2)	82.7 (82 - 83.4)	87.6 (86.6 - 88.6)
36	60 (59.1 - 60.8)	64.3 (63.7 - 65)	74 (73.4 - 74.6)	84.1 (83.5 - 84.7)	89 (88.2 - 89.8)
38	61 (60.2 - 61.9)	65.6 (64.9 - 66.3)	75.5 (74.7 - 76.3)	85.7 (84.9 - 86.5)	90.5 (89.5 - 91.6)
40	62.1 (60.8 - 63.4)	66.9 (65.8 - 67.9)	77.1 (75.9 - 78.3)	87.3 (85.8 - 88.8)	92.1 (90.4 - 93.9)

Green LJ, Mackillop LH, Salvi D, Pullon R, Loerup L, Mossop J et al. Gestation-specific vital sign reference ranges in pregnancy. *Obstet Gynecol* 2020;135.

The authors provided this information as a supplement to their article.

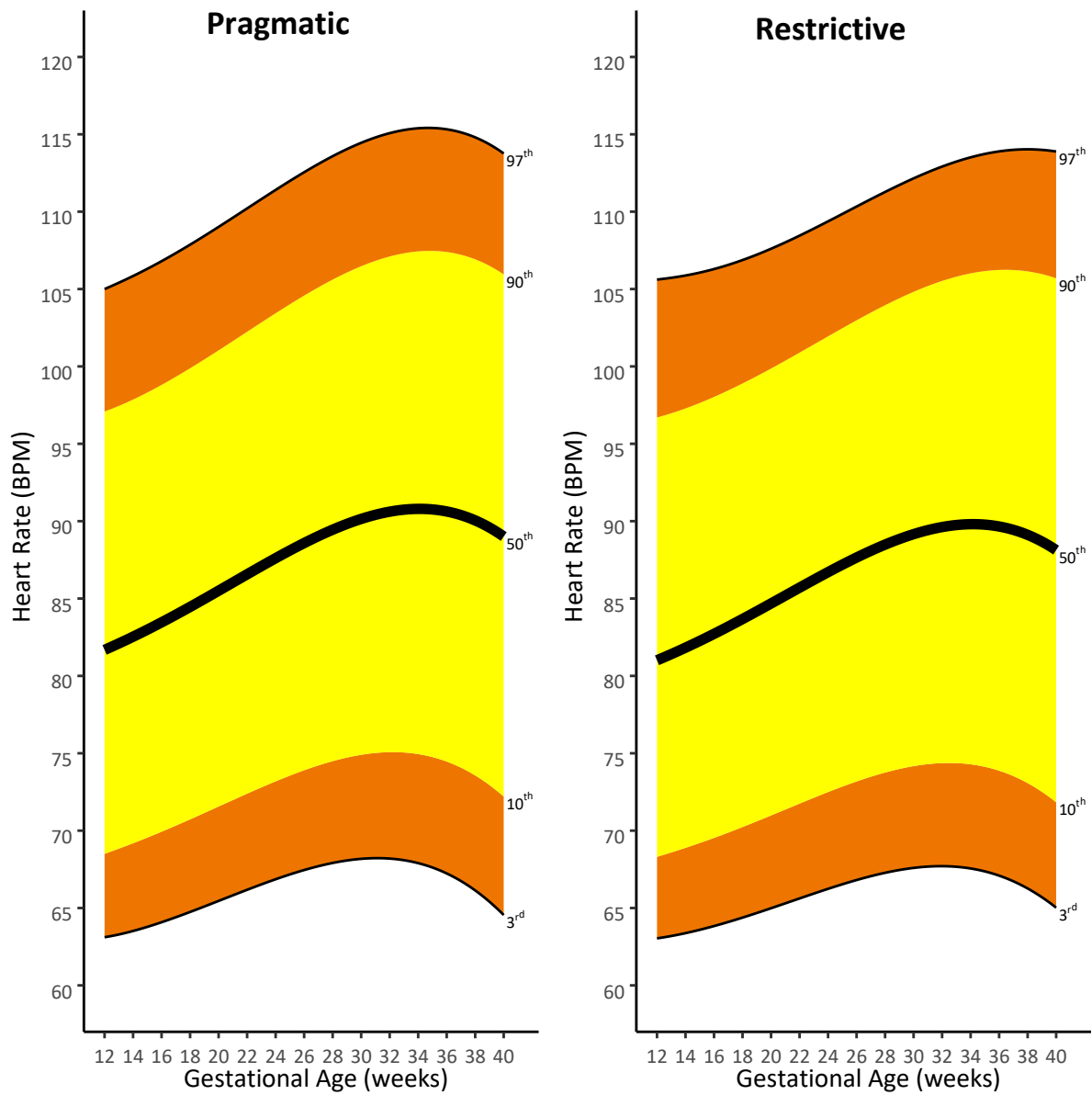
©2020 American College of Obstetricians and Gynecologists.

Figure A8.1: Smoothed centiles for blood pressure (mmHg); 3rd, 10th, 50th, 90th and 97th centiles for all participants (pragmatic) and restrictive cohorts.



Green LJ, Mackillop LH, Salvi D, Pullon R, Loerup L, Mossop J et al. Gestation-specific vital sign reference ranges in pregnancy. *Obstet Gynecol* 2020;135.
 The authors provided this information as a supplement to their article.
 ©2020 American College of Obstetricians and Gynecologists.

Figure A8.2: Smoothed centiles for heart rate (bpm); 3rd, 10th, 50th, 90th and 97th centiles for all participants (pragmatic) and restrictive cohorts.



Green LJ, Mackillop LH, Salvi D, Pullon R, Loerup L, Mossop J et al. Gestation-specific vital sign reference ranges in pregnancy. *Obstet Gynecol* 2020;135.
 The authors provided this information as a supplement to their article.
 ©2020 American College of Obstetricians and Gynecologists.

Figure A8.3: Smoothed centiles for respiratory rate (breaths per minute); 3rd, 10th, 50th, 90th and 97th centiles for all participants (pragmatic) and restrictive cohorts.

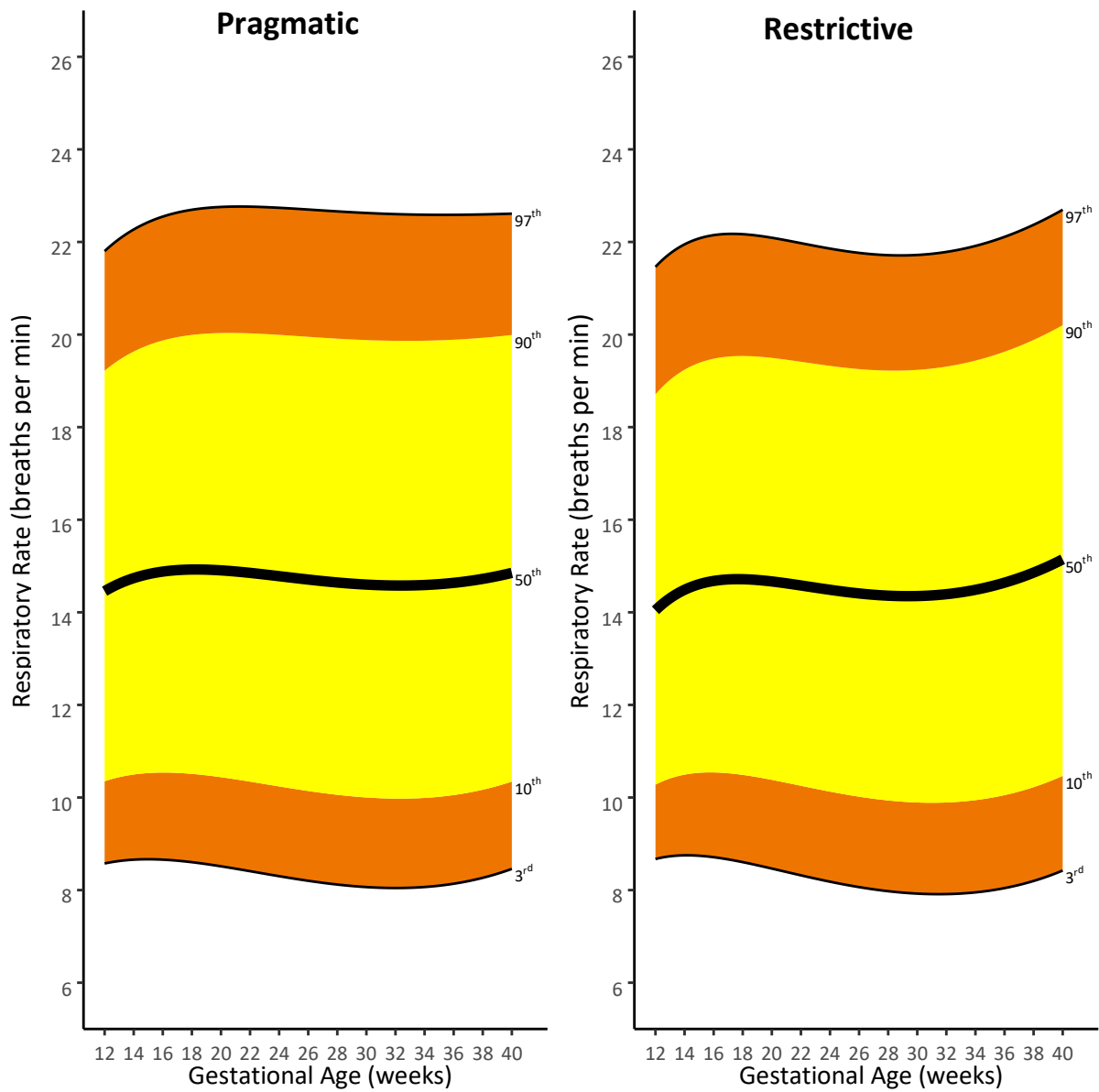


Figure A8.4: Smoothed centiles for oxygen saturation SpO₂ (%); 3rd, 10th, 50th, 90th and 97th centiles for all participants (pragmatic) and restrictive cohorts.

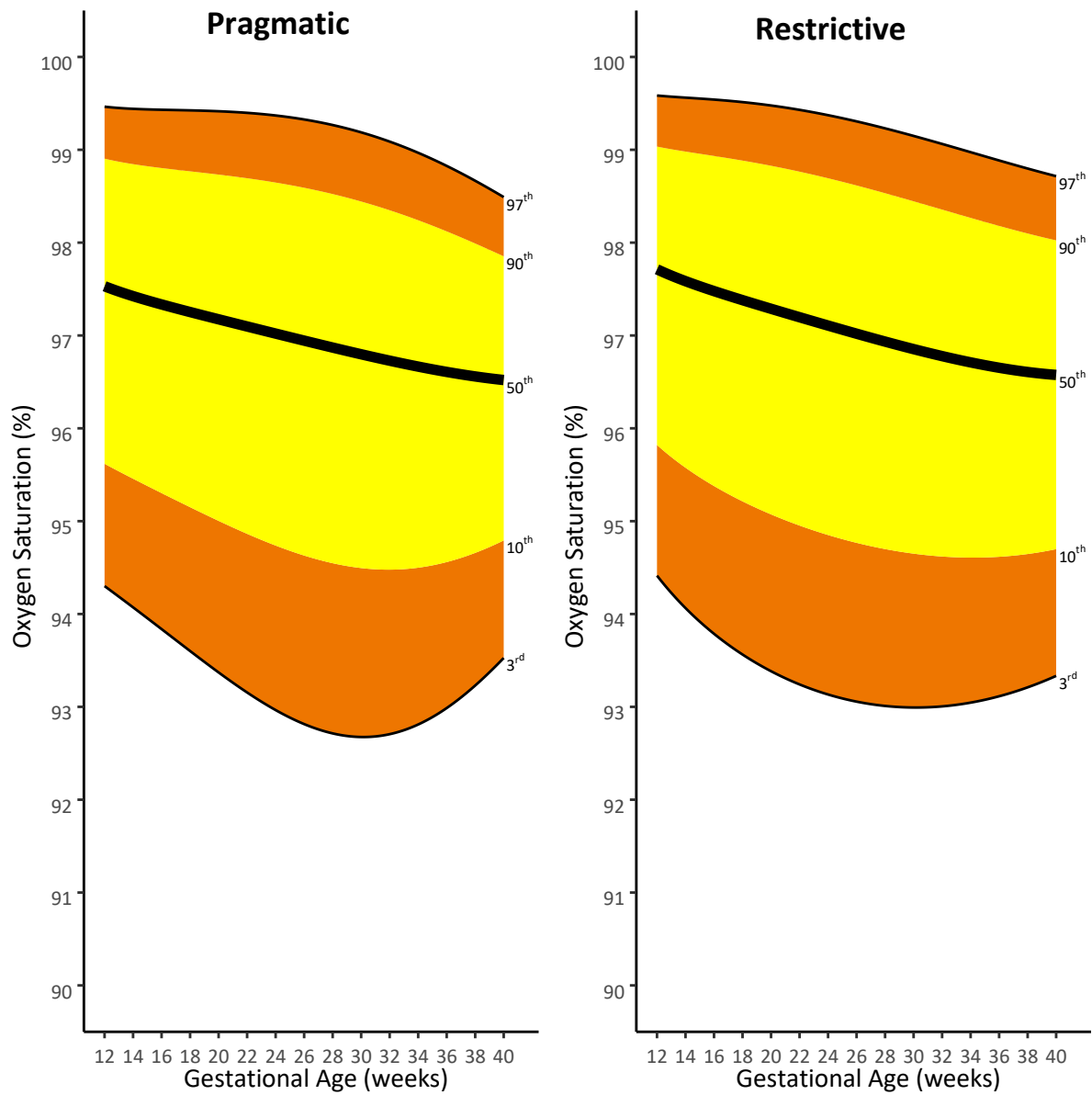
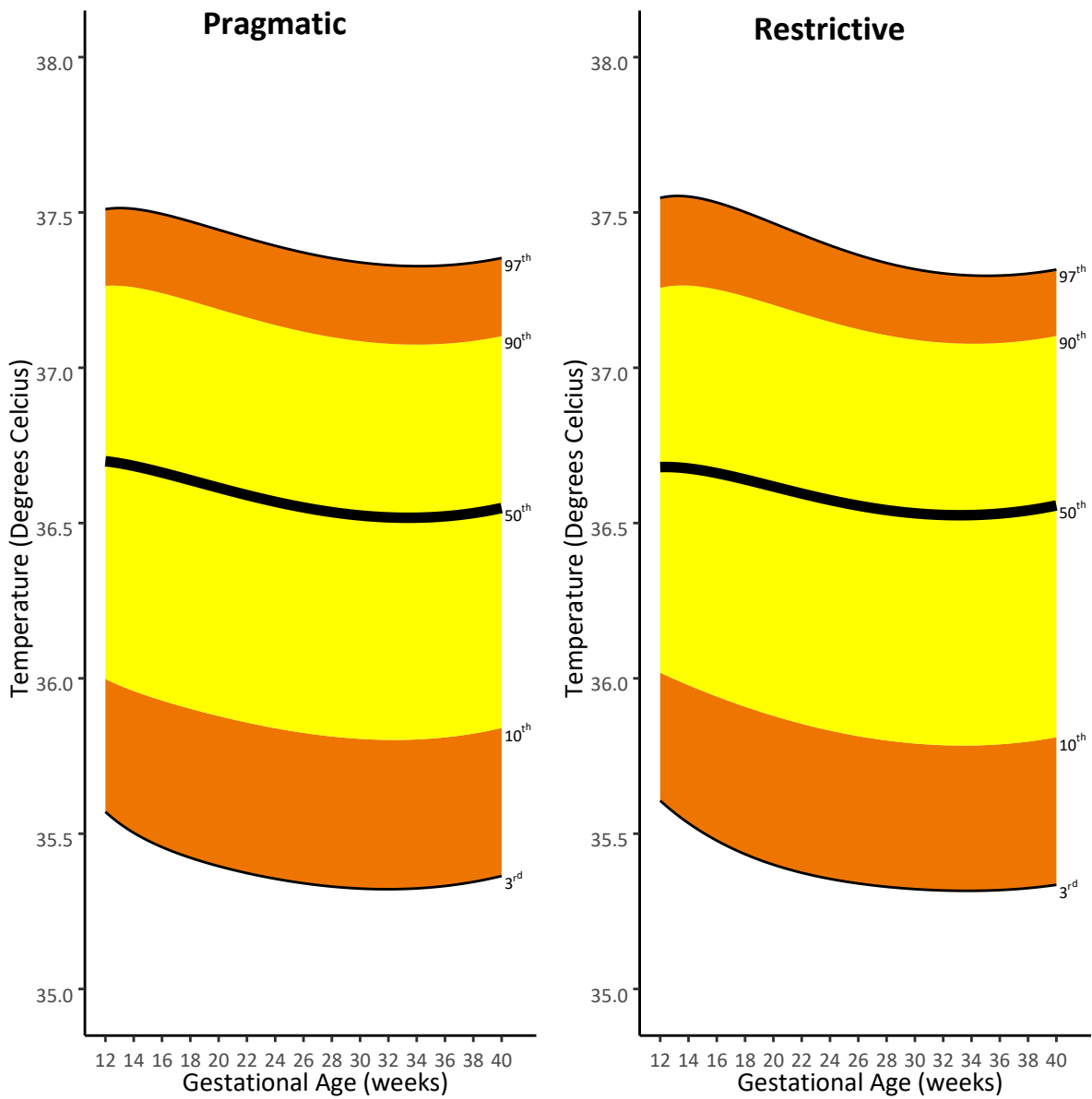


Figure A8.5: Smoothed centiles for temperature (°C) from Genius thermometer device; 3rd, 10th, 50th, 90th and 97th centiles for all participants (pragmatic) and restrictive cohorts.



Green LJ, Mackillop LH, Salvi D, Pullon R, Loerup L, Mossop J et al. Gestation-specific vital sign reference ranges in pregnancy. *Obstet Gynecol* 2020;135.

The authors provided this information as a supplement to their article.

©2020 American College of Obstetricians and Gynecologists.