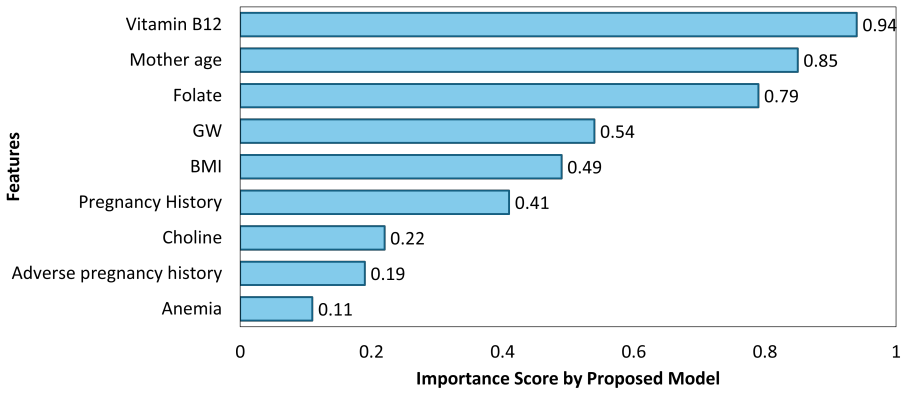
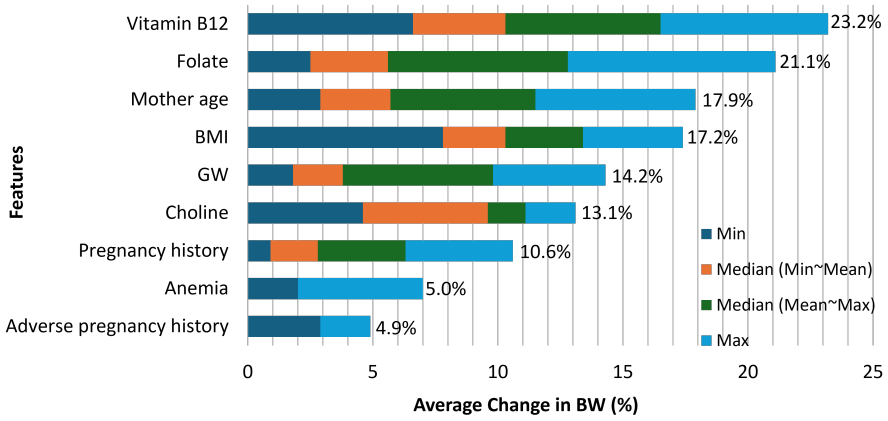
Supplementary Material

Table 1: Statistical description of maternal factors and label for Reus-Tarragona and IEEE datasets (Mean ± Standard Deviation or n (%)).

Reus-Tarragona Dataset		
Feature	**Statistical Description**	**Imputed Values**
Physiological Factors		
Maternal Age	32 ± 4.64	30
Previous Pregnancy	Yes: 391 (53.6%), No: 339 (46.4%)	19
Gestational Weeks	9.1 ± 1.8 GWs	43
Adverse Pregnancy History	Yes: 298 (40.8%), No: 432 (59.2%)	18
Maternal BMI	24.28 ± 4.66 kg/m^2	47
Nutritional Factors		
Maternal Plasma Folate	31.33 ± 28.90 nmol/L	242
Maternal Vitamin B12	340.03 ± 151.9 pmol/L	242
Maternal Betaine	15.6 ± 3.83 μmol/L	242
Maternal Choline	8.07 ± 1.73 μmol/L	242
Maternal Anemia (hemoglobin <11 g/dL)	Yes: 12 (1.6%), No: 718 (98.4%)	45
Target Variable		
Neonatal BW	3230 ± 470 g	0
IEEE Dataset		
Feature	**Statistical Description**	**Imputed Values**
Physiological Factors		
Maternal Age	22.9 ± 4.1	12
Maternal Height	141.2 ± 18.6 cm	193
Maternal Blood Group	A(+): 302 (22.4%), A(-): 64 (4.7%), B(+): 423 (31.3%), B(-): 48 (3.5%), AB(+): 168 (12.4%), AB(-): 39 (2.8%), O(+): 261 (19.3%), O(-): 45 (3.4%)	579
Previous Pregnancy	0.61 ± 0.95	17
Fetal Sex	Male: 698 (51.7%), Female: 652 (48.3%)	207
Initial Systolic Blood Pressure	106.6 ± 12.31	18
Initial Diastolic Blood Pressure	65.97 ± 8.30	18
Final Systolic Blood Pressure	111.10 ± 13.11	269
Final Diastolic Blood Pressure	70.61 ± 8.57	269
Nutritional Factors		
Initial hemoglobin level	9.97 ± 1.05 μmol/L	179
Final hemoglobin level	10.47 ± 1.00 μmol/L	179
Blood Sugar status	101.49 ± 17.00 mg/dL	683
Target Variable		
Neonatal BW	2.75 ± 0.45 kg	278



(a)



(b)

Figure 1: Feature importance and sensitivity analysis: (a) shows the relative importance of each input variable in the model, while (b) Sensitivity analysis illustrates average change in BW (%) with variation in each feature.