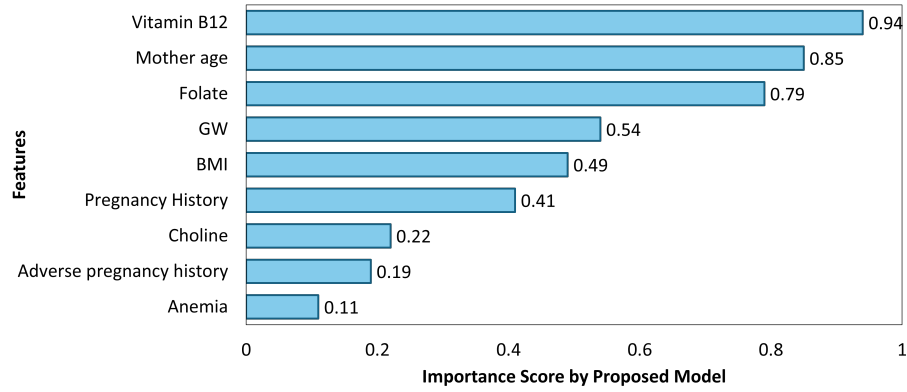


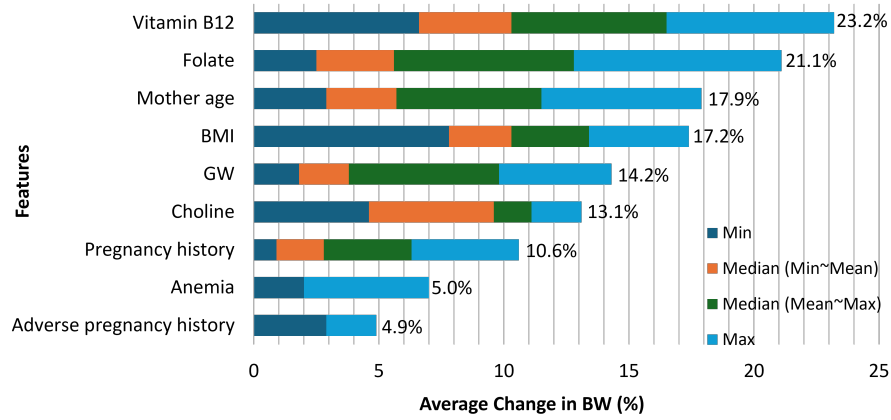
# Supplementary Material

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

Reus-Tarragona Dataset		
Feature	Statistical Description	Imputed Values
<b>Physiological Factors</b>		
Maternal Age	$32 \pm 4.64$	30
Previous Pregnancy	Yes: 391 (53.6%), No: 339 (46.4%)	19
Gestational Weeks	$9.1 \pm 1.8$ GWs	43
Adverse Pregnancy History	Yes: 298 (40.8%), No: 432 (59.2%)	18
Maternal BMI	$24.28 \pm 4.66$ kg/m <sup>2</sup>	47
<b>Nutritional Factors</b>		
Maternal Plasma Folate	$31.33 \pm 28.90$ nmol/L	242
Maternal Vitamin B12	$340.03 \pm 151.9$ pmol/L	242
Maternal Betaine	$15.6 \pm 3.83$ $\mu$ mol/L	242
Maternal Choline	$8.07 \pm 1.73$ $\mu$ mol/L	242
Maternal Anemia (hemoglobin <11 g/dL)	Yes: 12 (1.6%), No: 718 (98.4%)	45
<b>Target Variable</b>		
Neonatal BW	$3230 \pm 470$ g	0
IEEE Dataset		
Feature	Statistical Description	Imputed Values
<b>Physiological Factors</b>		
Maternal Age	$22.9 \pm 4.1$	12
Maternal Height	$141.2 \pm 18.6$ 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 $\pm$ 0.95	17
Fetal Sex	Male: 698 (51.7%), Female: 652 (48.3%)	207
Initial Systolic Blood Pressure	$106.6 \pm 12.31$	18
Initial Diastolic Blood Pressure	$65.97 \pm 8.30$	18
Final Systolic Blood Pressure	$111.10 \pm 13.11$	269
Final Diastolic Blood Pressure	$70.61 \pm 8.57$	269
<b>Nutritional Factors</b>		
Initial hemoglobin level	$9.97 \pm 1.05$ $\mu$ mol/L	179
Final hemoglobin level	$10.47 \pm 1.00$ $\mu$ mol/L	179
Blood Sugar status	$101.49 \pm 17.00$ mg/dL	683
<b>Target Variable</b>		
Neonatal BW	$2.75 \pm 0.45$ g	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.