

Table S1: Permutation importance rankings across pregnancy outcomes

Feature	Live birth term		Live birth preterm		Miscarriage		Stillbirth	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Z ^{ga} (within-pregnancy)	0.0103	1	0.0358	1	0.0114	3	0.0262	1
GA at EDD	0.0047	2	0.0067	2	—	—	—	—
GA at delivery	0.0010	3	0.0036	3	0.0296	1	0.0115	2
O ^{qscore} (across-pregnancy)	0.0008	4	0.0022	4	0.0288	2	0.0103	3
GA deviation	0.0000	5	0.0000	5	0.0000	4	0.0000	4

GA = gestational age; EDD = estimated date of delivery; EGA = expected gestational age.

Z^{ga}: z-score of GA within a pregnancy; measurements identical to the pregnancy mean were excluded as non-informative.

O^{qscore}: z-score of GA at delivery standardised across all pregnancies per outcome.

GA deviation: absolute difference between GA at delivery and the outcome-specific minimum and maximum expected GA range.

Permutation importance scores measure model performance degradation when a feature is randomly shuffled; higher values indicate greater importance.

(—) Feature not included in the outcome-specific model.

Table S2: Effect size rankings across pregnancy outcomes

Feature	Live birth term		Live birth preterm		Miscarriage		Stillbirth	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
EGA Max	—	—	1.414	1	0.632	1	—	—
Z-gestation	0.587	1	0.964	2	0.627	2	0.637	1
GA at delivery	0.587	2	0.964	3	0.627	3	0.637	2
GA z-score	0.554	3	0.012	5	0.273	4	0.031	3
GA at EDD	0.382	4	0.027	4	—	—	—	—

GA = gestational age; EDD = estimated date of delivery; EGA = expected gestational age.

Effect size measured as Cohen's d: standardised mean difference between anomalous and normal observations.

EGA Max: maximum expected GA per outcome (ectopic: 12 wks; miscarriage: 27.9 wks; preterm: 36.9 wks; term/stillbirth: 44 wks).

(—) Feature not included in the outcome-specific model or effect size was negligible.

Larger absolute values indicate greater statistical separation between anomalous and normal cases.