SUPPLEMENTAL TABLE AND FIGURES
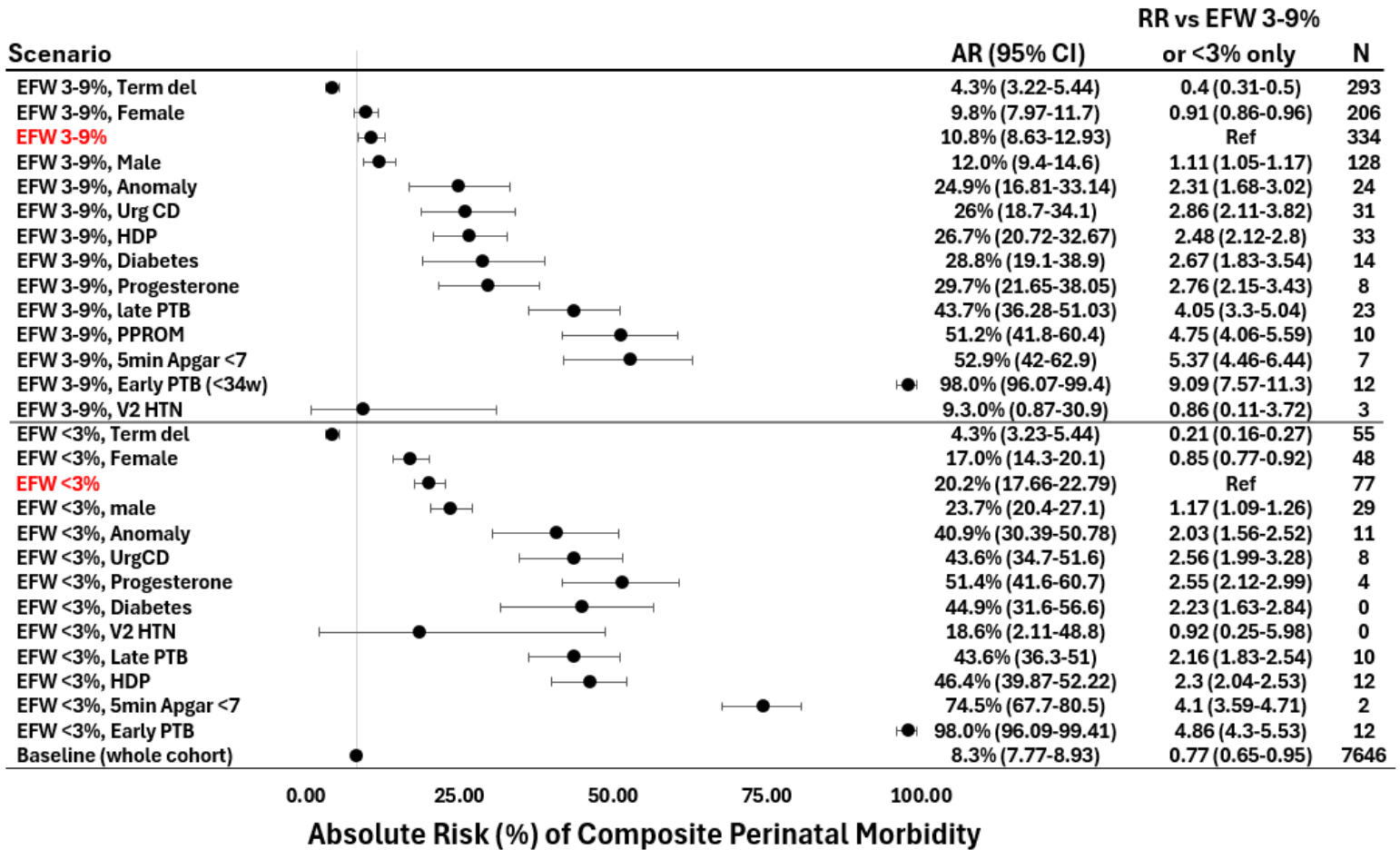
Supplementary Table. PGM variable missingness among analyzed participants (n=9553)

Variable	Missing, entire cohort, n(%)	Missing, training subcohort, n(%)	Missing, Validation subcohort, n(%)
Progesterone use	92 (1.0)	71 (0.7)	21 (1.1)
V3 EFW	612 (6.4)	481 (5.0)	131 (6.9)
5min Apgar <7	139 (1.5)	139 (1.5)	0 (0)
Congenital anomaly	83 (0.9)	63 (0.7)	20 (1)
GA at del	84 (0.9)	64 (0.7)	20 (1)
Neonatal sex	104 (1.1)	75 (0.8)	29 (1.5)
PPROM	0 (0)	0 (0)	0 (0)
Pregestational DM	88 (0.9)	66 (0.7)	22 (1.2)
UrgCD	0 (0)	0 (0)	0 (0)
V2 high BP	469 (4.9)	366 (3.8)	103 (5.4)
HDP	98 (1.0)	75 (0.8)	23 (1.2)
Composite perinatal morbidity	0 (0)	0 (0)	0 (0)

Supplementary Figure 1.

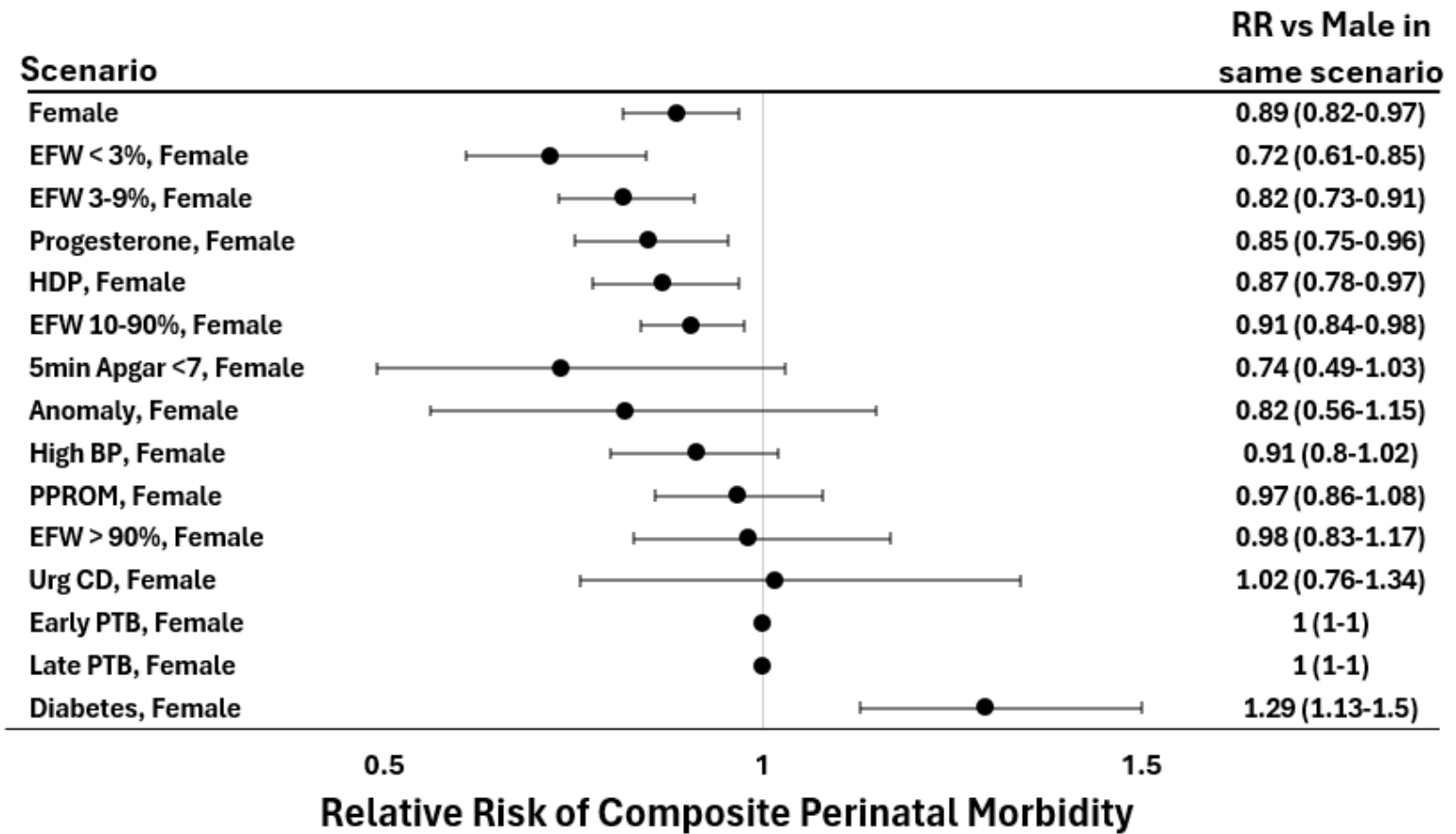**Title**: PGM-estimated absolute and relative risks of each PGM variable in the setting of FGR scenario.

Caption: The absolute risk (AR) column expresses the risk of composite perinatal morbidity for the given clinical scenario. The relative risk (RR) column expresses the RR of the given scenario when compared to the risk conferred by EFW 3-9th (or <3rd) percentile alone, as appropriate. N's represent the number of cohort participants in each scenario. The vertical gray line reflects the cohort's background risk of composite perinatal morbidity (8.3%). Diabetes refers to pre-gestational diabetes. In the clinical scenarios, "%" denotes percentile. PGM, probabilistic graphical model; AR, absolute risk (expressed as a percent); SD, standard deviation; EFW, estimated fetal weight; PTB, preterm birth. When used alongside EFWs, % denotes percentile.

Scenario	AR (95% CI)	RR vs EFW 3-9% or <3% only	N
EFW 3-9%, Term del	4.3% (3.22-5.44)	0.4 (0.31-0.5)	293
EFW 3-9%, Female	9.8% (7.97-11.7)	0.91 (0.86-0.96)	206
EFW 3-9%	10.8% (8.63-12.93)	Ref	334
EFW 3-9%, Male	12.0% (9.4-14.6)	1.11 (1.05-1.17)	128
EFW 3-9%, Anomaly	24.9% (16.81-33.14)	2.31 (1.68-3.02)	24
EFW 3-9%, Urg CD	26% (18.7-34.1)	2.86 (2.11-3.82)	31
EFW 3-9%, HDP	26.7% (20.72-32.67)	2.48 (2.12-2.8)	33
EFW 3-9%, Diabetes	28.8% (19.1-38.9)	2.67 (1.83-3.54)	14
EFW 3-9%, Progesterone	29.7% (21.65-38.05)	2.76 (2.15-3.43)	8
EFW 3-9%, late PTB	43.7% (36.28-51.03)	4.05 (3.3-5.04)	23
EFW 3-9%, PPROM	51.2% (41.8-60.4)	4.75 (4.06-5.59)	10
EFW 3-9%, 5min Apgar <7	52.9% (42-62.9)	5.37 (4.46-6.44)	7
EFW 3-9%, Early PTB (<34w)	98.0% (96.07-99.4)	9.09 (7.57-11.3)	12
EFW 3-9%, V2 HTN	9.3.0% (0.87-30.9)	0.86 (0.11-3.72)	3
EFW <3%, Term del	4.3% (3.23-5.44)	0.21 (0.16-0.27)	55
EFW <3%, Female	17.0% (14.3-20.1)	0.85 (0.77-0.92)	48
EFW <3%	20.2% (17.66-22.79)	Ref	77
EFW <3%, male	23.7% (20.4-27.1)	1.17 (1.09-1.26)	29
EFW <3%, Anomaly	40.9% (30.39-50.78)	2.03 (1.56-2.52)	11
EFW <3%, UrgCD	43.6% (34.7-51.6)	2.56 (1.99-3.28)	8
EFW <3%, Progesterone	51.4% (41.6-60.7)	2.55 (2.12-2.99)	4
EFW <3%, Diabetes	44.9% (31.6-56.6)	2.23 (1.63-2.84)	0
EFW <3%, V2 HTN	18.6% (2.11-48.8)	0.92 (0.25-5.98)	0
EFW <3%, Late PTB	43.6% (36.3-51)	2.16 (1.83-2.54)	10
EFW <3%, HDP	46.4% (39.87-52.22)	2.3 (2.04-2.53)	12
EFW <3%, 5min Apgar <7	74.5% (67.7-80.5)	4.1 (3.59-4.71)	2
EFW <3%, Early PTB	98.0% (96.09-99.41)	4.86 (4.3-5.53)	12
Baseline (whole cohort)	8.3% (7.77-8.93)	0.77 (0.65-0.95)	7646

Absolute Risk (%) of Composite Perinatal Morbidity

Supplementary Figure 2.

Title: Association of female fetal sex with composite perinatal morbidity compared to male sex in combination with other variables in the PGM.

Caption: The PGM identified scenarios in which female sex was associated with reduced risk (EFW <3rd percentile, EFW 3-9th percentile, EFW 10-90th percentile, progesterone use, HDP), uncertain risk (5 minute Apgar <7, fetal anomaly, high BP 16-21 weeks, EFW >90th percentile, urgent cesarean), no difference in risk (early and late PTB), and elevated risk (pre-gestational diabetes), compared to male sex.

Scenario	RR vs Male in same scenario
Female	0.89 (0.82-0.97)
EFW < 3%, Female	0.72 (0.61-0.85)
EFW 3-9%, Female	0.82 (0.73-0.91)
Progesterone, Female	0.85 (0.75-0.96)
HDP, Female	0.87 (0.78-0.97)
EFW 10-90%, Female	0.91 (0.84-0.98)
5min Apgar <7, Female	0.74 (0.49-1.03)
Anomaly, Female	0.82 (0.56-1.15)
High BP, Female	0.91 (0.8-1.02)
PPROM, Female	0.97 (0.86-1.08)
EFW > 90%, Female	0.98 (0.83-1.17)
Urg CD, Female	1.02 (0.76-1.34)
Early PTB, Female	1 (1-1)
Late PTB, Female	1 (1-1)
Diabetes, Female	1.29 (1.13-1.5)

Relative Risk of Composite Perinatal Morbidity

Supplementary Figure 3.

Title: The association of progesterone use with composite perinatal morbidity does not vary according to fetal sex, maternal pregestational diabetes, or EFW percentile category.

Scenario		RR (95% CI)
Progesterone		2.75 (2.08-3.54)
Female sex, Progesterone		2.67 (2.02-3.46)
Male sex, Progesterone		2.81 (2.12-3.61)
Diabetes, Progesterone		2.34 (1.76-3.04)
No diabetes, Progesterone		2.72 (2.04-3.52)
EFW <3, Progesterone		2.72 (2.19-3.26)
EFW 3-9%, Progesterone		2.91 (2.22-3.69)
EFW 10-90%, Progesterone		2.56 (1.9-3.34)
EFW >90%, Progesterone		2.73 (2.02-3.56)

0.5   1.5   2.5   3.5

Relative Risk for Composite Perinatal Morbidity, Progesterone use vs no progesterone use in same scenario