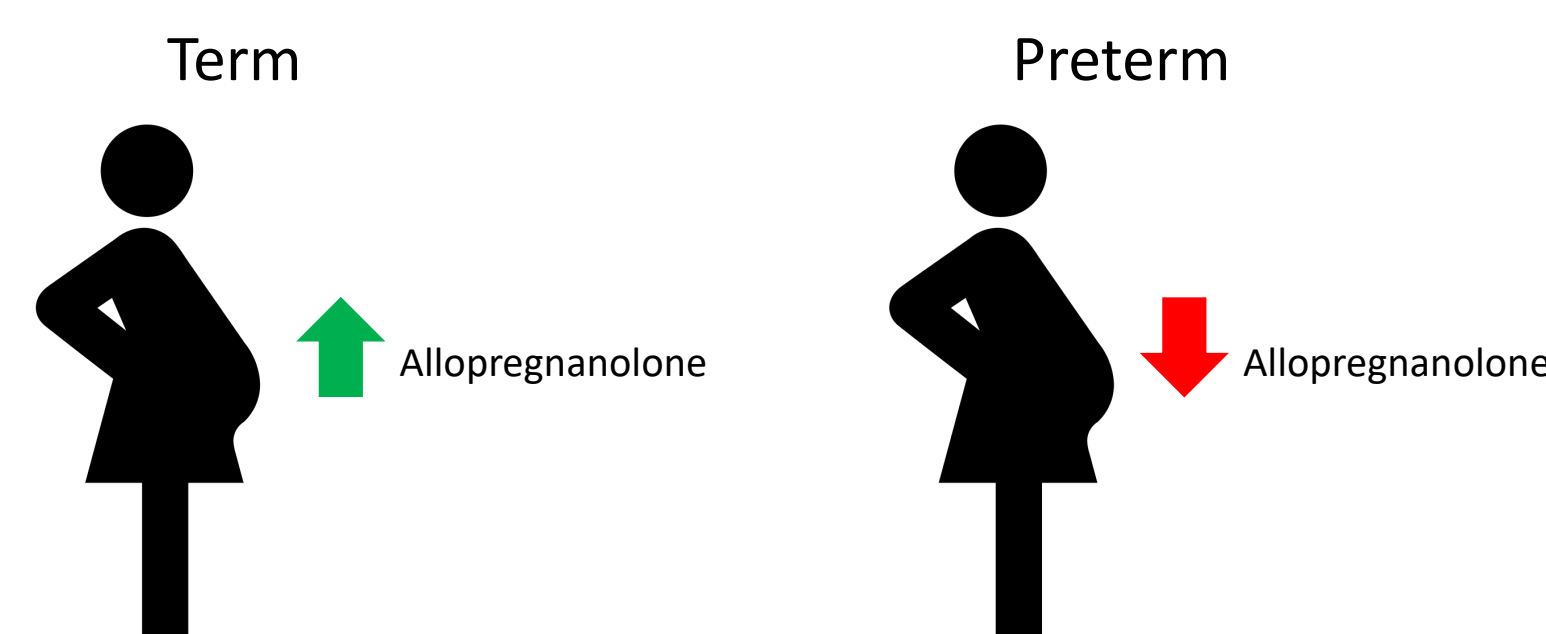


INTRODUCTION

- **Chronic stress** is a risk factor for **preterm birth**
- There is a pressing need to **predict preterm birth risk** and identify **potential treatments**
- **Stress-responsive neurosteroids** play a critical role in **pregnancy and stress pathophysiology**
- Low **allopregnanolone** is associated with
 - *Perinatal depression*
 - *Poor birth outcomes in animal models*

We hypothesized **allopregnanolone is lower in women who deliver preterm**



METHODS

- **Nested case-control study** using fasting biobank serum samples from **The Healthy Start Study Pre-Birth Cohort**
- **Healthy**, singleton pregnancy, 18-34 yo
- Preterm cases **matched (1:1)** with term controls (**N=27 per group**)
- **Developed and validated a new HPLC-MS/MS assay** for quantification

	Gestational Age at Blood Sample 1	Gestational Age at Blood Sample 2
Mean (Range)	16.8 weeks (12.4 – 25)	26.5 weeks (22.3 – 32)

Maternal serum steroids in early pregnancy associate with preterm birth.

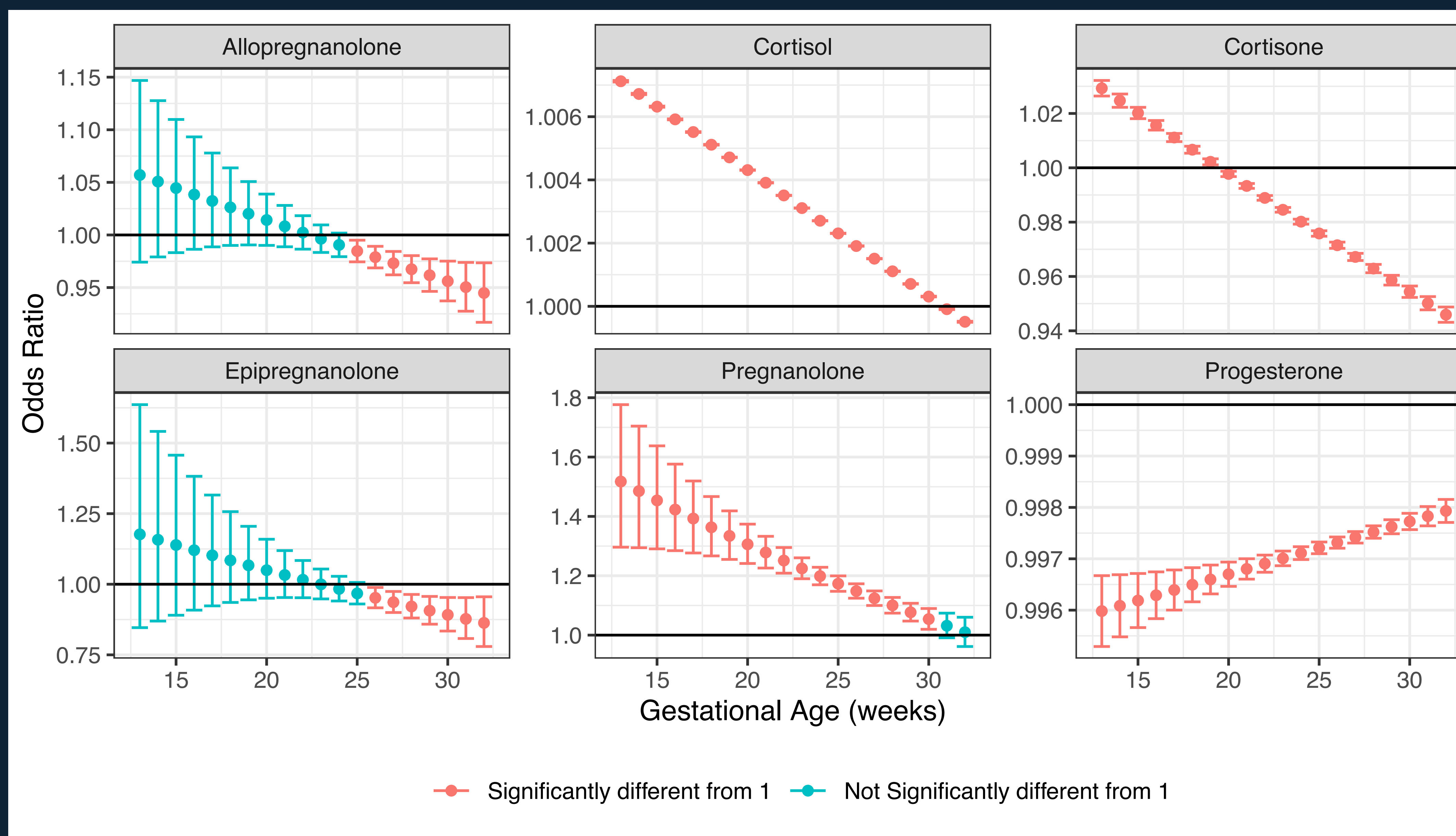


Fig. 1 Odds ratios for preterm birth by serum concentration at a given gestational age. Odds ratios at 13 – 32 weeks’ gestation with 95% confidence intervals. Horizontal black bar is odds ratio of 1 indicating no association. Values above 1 indicate increased association with odds of preterm birth and values below 1 indicate reduced association with odds of preterm birth.

RESULTS

- **Allopregnanolone:**
 - **Higher levels in late pregnancy** are associated with **decreased odds of preterm birth**
 - **No significant difference** in group comparisons
- **Other Steroid Hormones:**
 - **Higher cortisol, cortisone and pregnanolone levels, early in pregnancy, associate with increased odds of preterm birth.**
 - **Progesterone is the inverse.**
 - **Cortisol significantly different** between preterm and term groups

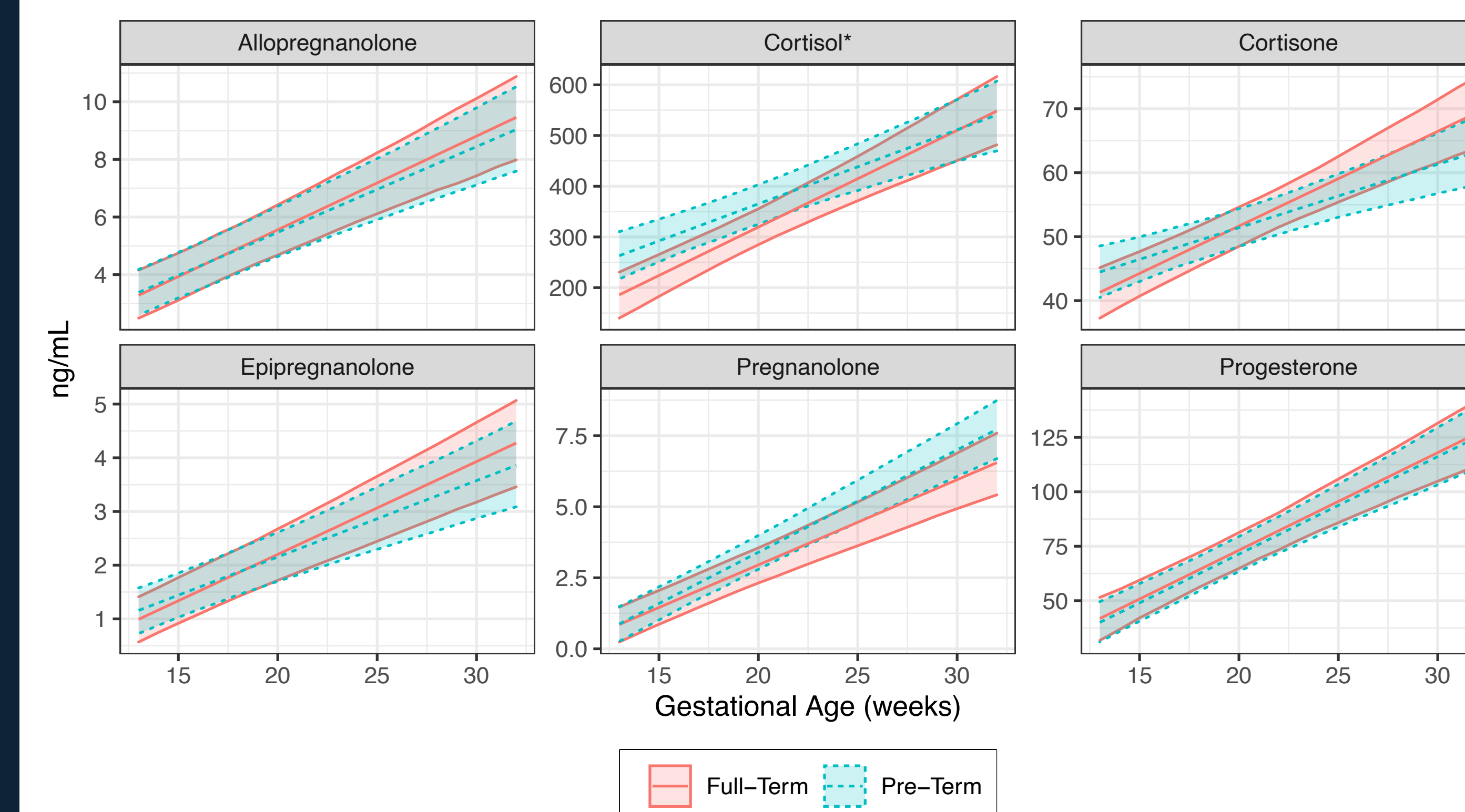


Fig. 2 Estimated mean serum concentration for a given gestational age with confidence intervals by pre- and full-term delivery.*We observed significant differences in the estimated mean cortisol levels between the cohorts at gestational ages 13⁺⁰ – 18⁺⁰.