# Is the Day of Last Menstrual Period a Predictor of Preterm Birth?

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**Background**: Preterm birth is the leading cause of infant death and disability in the US. Previous studies have demonstrated that preterm birth rates (PTBR) are seasonal and linked to month of last menstrual period (LMP). We wondered whether LMP day (LMPD) might correlate with PTBR.

**Objective**: Is preterm birth risk positively correlated with LMPD?

**Design/Methods**: CDC natality data from 1990-2008 were analyzed. Included were continental US residents, 22-43 weeks. Excluded were pregnancies with no prenatal care, non-US residence and LMP unknown. PTBR was calculated for each LMPD across all LMP months and years. Maternal age, race, parity, education, tobacco, alcohol, diabetes, hypertension, induction, delivery route, meconium, plurality, gestation, assisted ventilation were abstracted. PTBR was aggregated by year, month and LMPD after adjusting for month and year. Analysis was repeated in subpopulations stratified by abstracted risk factors. Random effects were used to account for within unit correlation caused by repeated measurements over months and years.

**Results:** 64,872,927 records were reviewed. PTBR was positively correlated with LMPD(slope±SE0.08±0.01($p<0.001$). PTBR rose by 0.08% for each LMP day from 1-31. This relationship remained significant in each year from 1990-2008 and in all months except October. Subgroup analysis showed that the correlation remained significant for every demographic and pregnancy outcome variable tested. That is, regardless of race or maternal demographics, PTBR can be predicted by LMPD with lower to higher risk associated with lower to higher PTBR. LMPD represents a covariate in predicting preterm birth rates.

**Conclusions:** PTBR increases with increasing LMPD. The correlation was remarkably strong and persisted throughout all risk categories. Despite its biological implausibility we were unable to find an explanation for this correlation within the usual risk categories. LMPD was removed from the birth certificate in 2008. These data suggest that LMPD may be more important than was previously thought.

PTBR vs. LMP Day Singletons 1990-2008