

Generate un-truncated data from a previously published dating equation by Verburg et al.

Simulate 100 observations for CRL between 5mm and 110mm in 1mm increments

Model the simulated data relating GA (Y-axis) as a function of CRL (X-axis) using fractional polynomial regression

Compare fractional polynomial terms and predicted median GA from simulated data to the original dating equation reported by Verburg et al.

Truncate gestational age at 9 and 14 weeks to make it similar to the INTERGROWTH-21st CRL data

Approach 1

1. Model CRL as function of GA to obtain mean and SD equations
2. Use this model to simulate CRL values for GA between 7 and 9 weeks
3. Model GA as function of CRL for $CRL \leq 65$ mm using observed data augmented by simulated CRL data
4. Extrapolate this model to extend the CRL range to 95 mm

Approach 2

1. Model CRL as function of GA to obtain mean and SD equations
2. Use this model to simulate CRL values between 7 and 9 weeks and between 14 and 17 weeks
3. Model GA as function of CRL using observed data augmented by simulated CRL data

Approach 3

1. Model CRL as function of GA to obtain mean and SD equations
2. Extrapolate this model beyond 14 weeks to 17 weeks GA
3. Interchange the Y and X axes from a model for size so that we now have GA as a function of CRL