Developing intrauterine growth curve from two Mayan populations in Guatemala

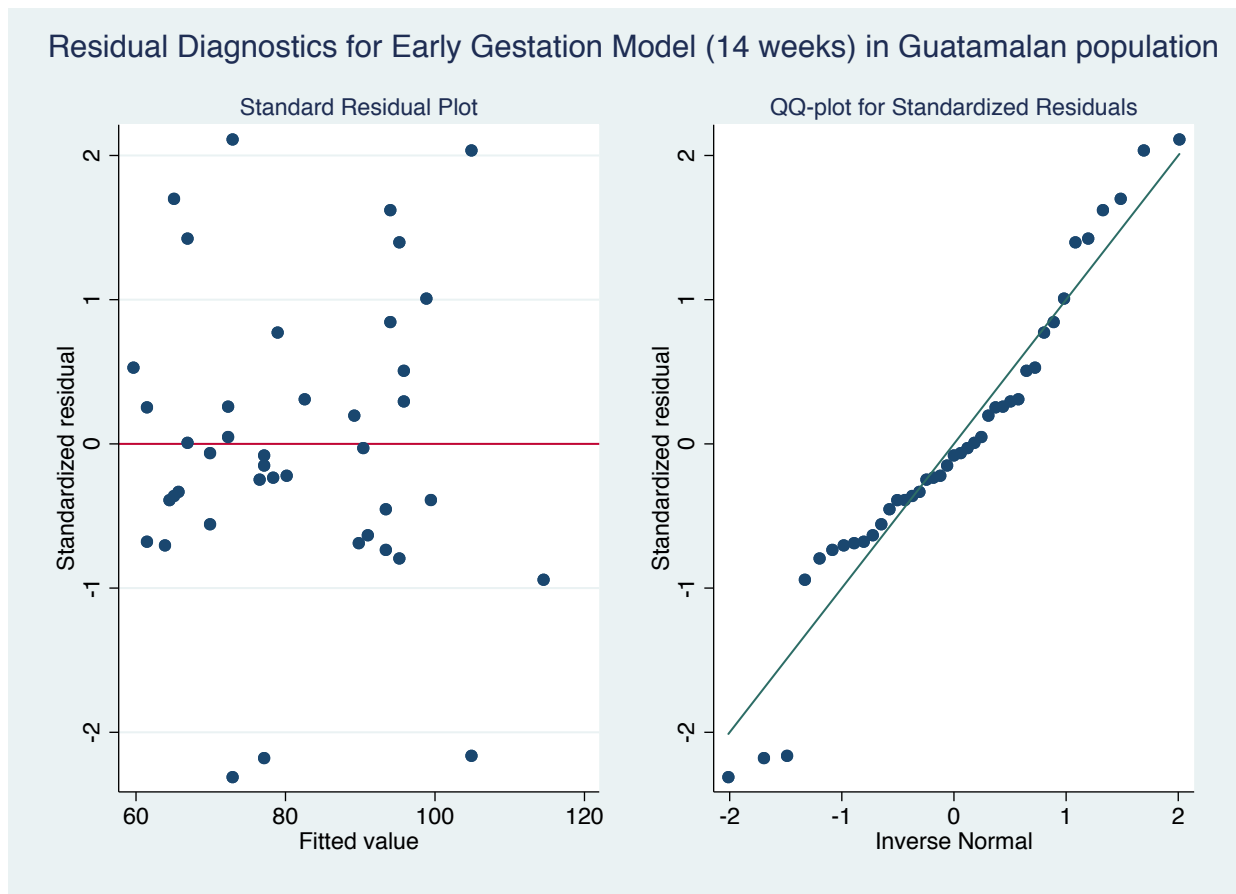Alexis C Garduno[1], Priya Srikanth[2], Brent A Burket[3]

[1]SDSU/UCSD Joint Doctoral Program in Public Health Epidemiology, La Jolla, California, USA
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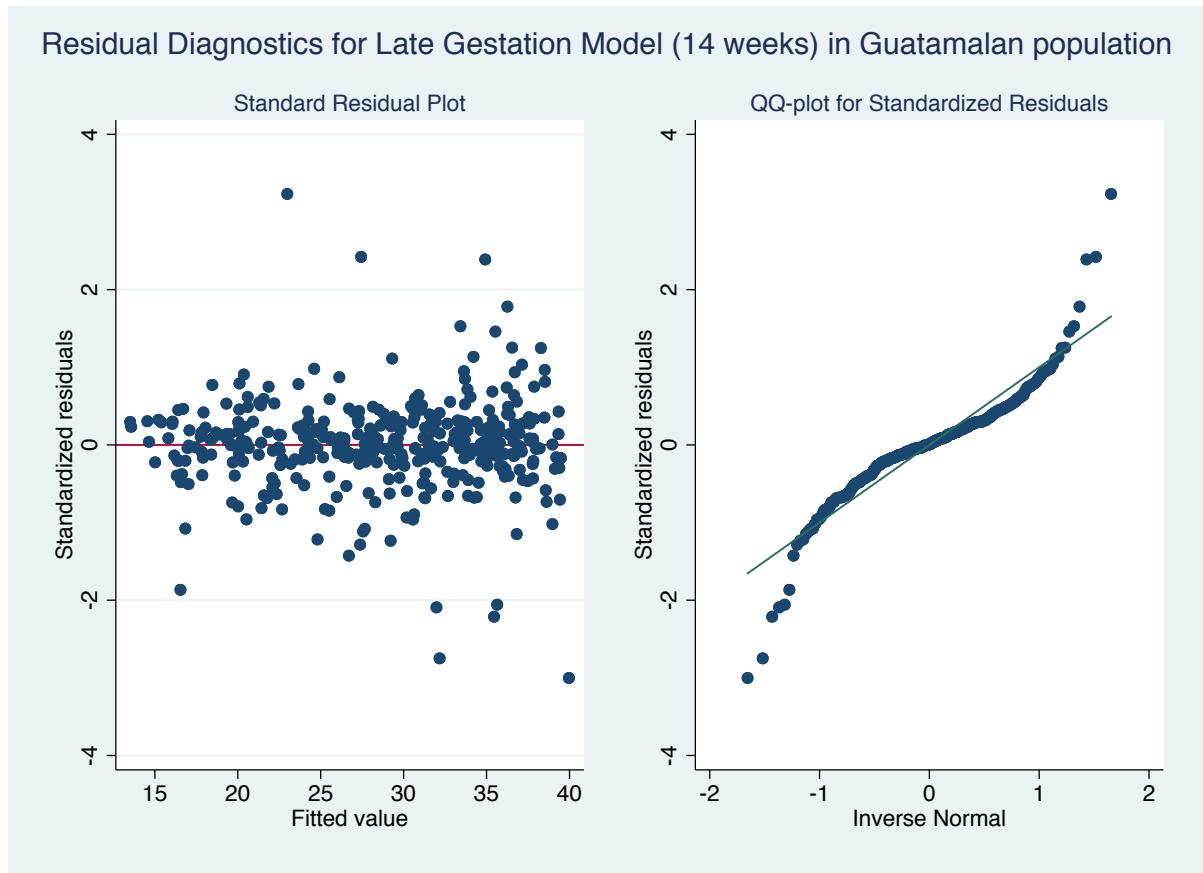
ONLINE SUPPLEMENTARY MATERIAL

Figure S1. Diagnostics for Early Gestation.

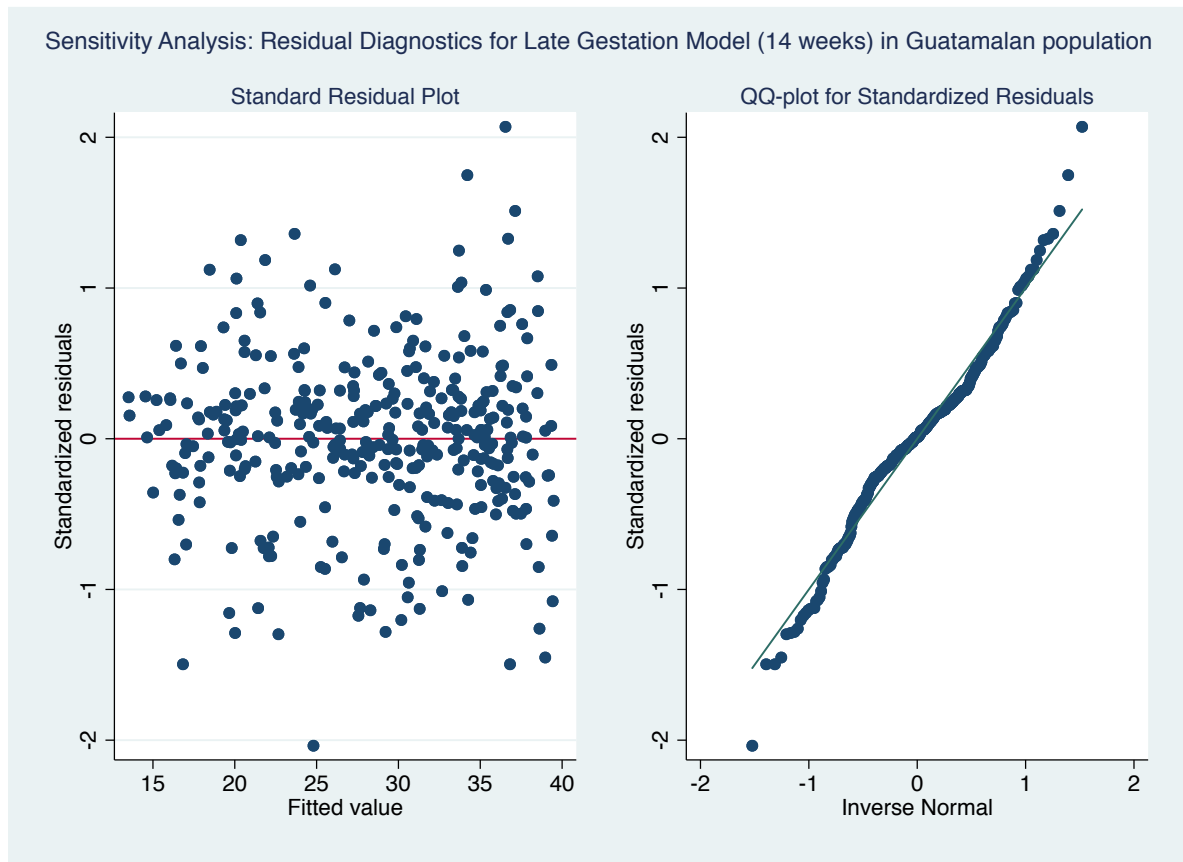Residual Diagnostics for Early Gestation Model (14 weeks) in Guatamalan population

In the figure above, the standardized residuals are plotted to demonstrate that the model does not violate assumptions of normality, equal variance, or linearity. The mean and standard deviation of the standardized residuals is -.01 (standard error=0.24).

Figure S2. Diagnostics for Late Gestation.

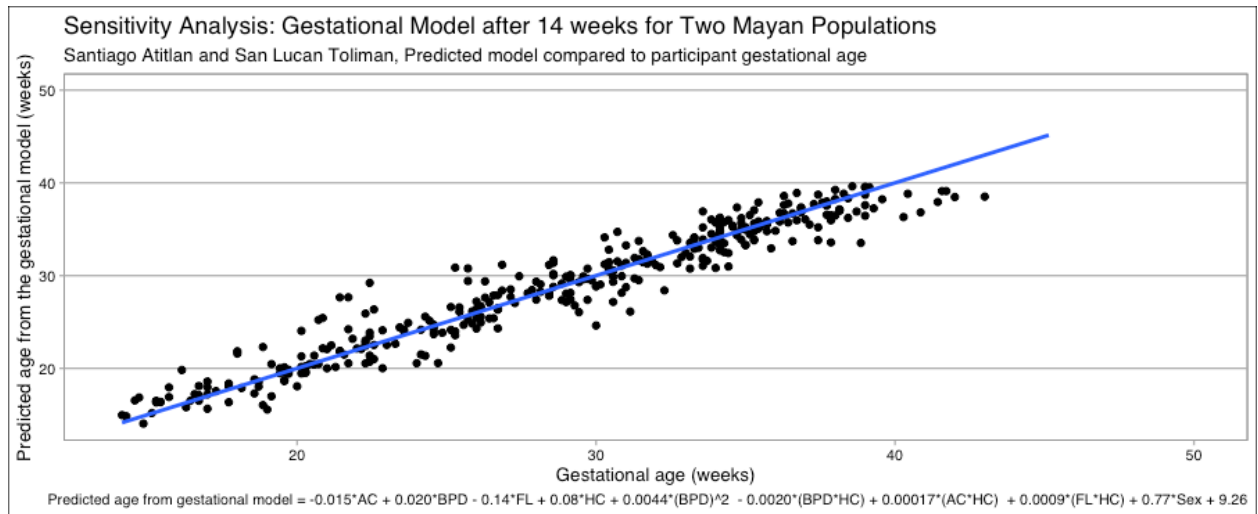Residual Diagnostics for Late Gestation Model (14 weeks) in Guatamalan population

In the figure above, the standardized residuals are plotted to demonstrate that the model does not strongly violate assumptions of normality, equal variance, or linearity. Q-Q plots show evidence of heavy tails, or the presence of outliers at the extreme ends of the data. The mean and standard deviation of the standardized residuals is -1.27e-09 (standard error= .03).

Figure S3. Sensitivity Analysis Diagnostics for Late Gestation after Removal of Extreme Outliers.

Sensitivity Analysis: Residual Diagnostics for Late Gestation Model (14 weeks) in Guatamalan population

In the figure above, the standardized residuals are plotted to demonstrate that the model does not violate assumptions of normality, equal variance, or linearity. In this sensitivity analysis, the Q-Q plots does not suggest violation of the normality assumption. The mean and standard deviation of the standardized residuals is 1.22e-09 (standard error= .03).

Figure S4. Final Model after deletion of outliers.

Sensitivity Analysis: Gestational Model after 14 weeks for Two Mayan Populations
Santiago Atitlan and San Lucan Toliman, Predicted model compared to participant gestational age

Predicted age from gestational model = $-0.015 \cdot AC + 0.020 \cdot BPD - 0.14 \cdot FL + 0.08 \cdot HC + 0.0044 \cdot (BPD)^2 - 0.0020 \cdot (BPD \cdot HC) + 0.00017 \cdot (AC \cdot HC) + 0.0009 \cdot (FL \cdot HC) + 0.77 \cdot Sex + 9.26$

The sensitivity analysis reveals that the predicted model does not significantly change the significance of the terms in the model nor the values of the regression coefficients of the linear mixed effect model. This model is fitted using ultrasound fetal biometrics taken after 14 weeks of gestation in Guatemalan women after deletion of extreme outliers. The predicted value for gestational age is plotted against actual gestational age.