

# RESIDENTIAL PROXIMITY TO MAJOR ROADS AND PLACENTAL WEIGHT RELATIVE TO BIRTH WEIGHT

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**Background and Aims:** The ratio between placenta and birth weight could be a useful indicator of placental function and a disproportionately large placenta may show an inefficient placenta with decreased ability to translate its own growth to fetal growth. A recent study suggests that a disproportionately large placenta is associated with increased risk of cardiovascular disease death in later life. We thus evaluated the association between proximity to major roads (as an index for air pollution) and placental weight relative to birth weight.

**Methods:** Data on parental information and birth outcomes were extracted from the database maintained by the perinatal hospital in Shizuoka, Japan. We restricted the analysis to mothers who delivered liveborn single births from 1997 to 2008 ( $n = 14,189$ ). Using the geocoded residential information, each birth was classified on its proximity to major roads. We estimated the multivariate-beta coefficients and their 95% confidence intervals (CIs) for the association of proximity to major roads with the placenta-birth-weight-ratio as well as placental weight, using multiple linear regression.

**Results:** We found a positive association between proximity to major roads and the placenta-birth-weight-ratio. Mean of the placenta-birth-weight-ratio was 20.1 % for mothers living outside 200m from major roads, in contrast the mean was 20.5 % for mothers living within 200 m. After adjusting for potential confounders, living within 200 m increased the ratio by 0.45 % (95% CI = 0.13 – 0.78). Proximity also decreased the placental weight by 13.67 g (95% CI = 5.15 – 22.18); however the association was attenuated after birth weight adjustment.

**Conclusions:** This study demonstrates that exposure to traffic-related air pollution increases the placenta-birth-weight-ratio.