



Road traffic noise and air pollution exposures and birth outcomes in London

Rachel B Smith¹; Daniela Fecht¹; John Gulliver¹; Sean Beevers²; David Dajnak²; Marta Blangiardo¹; Rebecca Ghosh¹; Anna L Hansell¹; Frank Kelly²; Ross Anderson³; Mireille B Toledano¹

¹ Imperial College London

² Kings College London

³ St George's, University of London / Kings College London

Corresponding author's e-mail address: rachel.smith05@imperial.ac.uk

ABSTRACT

Research on noise and birth outcomes is limited, but suggests an association with low birthweight. This study investigates road traffic noise and air pollution exposures in relation to birth outcomes, in a registry-based population of 887,664 singleton live and stillbirths in the Greater London area (2003-2010). We estimated road traffic noise at birth address for 2007 using the TRAffic Noise EXposure (TRANEX) model, and also prenatal exposure to traffic-related air pollutants. We are analysing the relationship between noise and air pollutant exposures and birth outcomes, including term birth weight, preterm birth, and stillbirth. Mean day (LAeq,16hr) and night-time (Lnight) road traffic noise exposures were 58dB and 53dB respectively, and were moderately correlated with traffic-related air pollutant exposures (0.29-0.50). Preliminary results suggest that increasing road traffic noise is associated with decreasing mean term birth weight, but that this is not robust to adjustment for traffic-related air pollution. Analyses for other birth outcomes are ongoing. This will be the largest study to date examining joint noise and air pollution exposures in relation to birth outcomes.