

An Investigation of the Association Between Traffic Exposure and the Diagnosis of Asthma in Children

Abstract

This study investigated whether proximity to traffic at residence location is associated with being diagnosed with asthma as a young child. A survey of parents of children (aged 5-7) in kindergarten and first-grade in 13 schools was completed in Anchorage, Alaska, and Geographical Information System (GIS) mapping was used to obtain an exposure measure based on traffic density within 100 m of the cross streets closest to the child's residence. Using the range of observed exposure values, a score of low, medium or high traffic exposure was assigned to each child. After controlling for individual level confounders, relative to the low referent group, relative risks (95% confidence intervals) of 1.40 (0.77, 2.55) and 2.83 (1.23,6.51) were obtained in the medium and high exposure groups, respectively. For the null hypothesis of no difference in risk, a significance level of 0.056 was obtained, which suggests that further investigation would be worthwhile. Children without a family history of asthma were more likely to have an asthma diagnosis if they resided in a high traffic area than children who had one or more parents with asthma. The relative risk for children without a family history of asthma is 2.43 (1.12, 5.28) for medium exposure and 5.43 (2.08, 13.74) for high exposure. For children with a family history of asthma, the relative risk is 0.66 (0.25, 1.74) for medium exposure and 0.67 (0.12, 3.69) for high exposure. The P-value for the overall "exposure-effect" (i.e. both main effects AND interaction terms) is 0.0097.

Gordian ME, Haneuse S, Wakefield J. An investigation of the association between traffic exposure and the diagnosis of asthma in children. *J Expo Sci Environ Epidemiol.* 2006 Jan;16(1):49-55.