

# ASSOCIATION BETWEEN VEHICULAR DENSITY AND HOSPITALIZATION BY RESPIRATORY DISEASES AMONG CHILDREN IN THE CITY OF SAO PAULO, BRAZIL

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**Background and aims:** Traffic-related air pollution has been associated with respiratory disease (RD) in children in different developed countries. In Brazil, this is the first study to look at the impact of this exposure on the respiratory health of this population subgroup.

**Methods:** Hospital admissions by RD (ICD-10: J00-J06; J10-J16; J18; J20-J22 and J45-J46) of children <5 years old, from public and private hospitals of the city of Sao Paulo in the period 2004-2006, were geocoded according to their residence addresses. Vehicular density (VD) was calculated for micro-areas of 500m<sup>2</sup> of the city and was used as the indicator of exposure to traffic-related air pollution. The number of resident people, household density (HD) and the Human Development Index (HDI) were available for these micro-areas. Admission rates for children were calculated for the micro-areas and VD, HD and HDI were categorized into quartiles. Multiple logistic regression models with the admission rates as the dichotomous dependent variable (equal or greater than the median) and VD, HD and HDI as independent variables were used.

**Results:** 76,351 admissions of children were analyzed in 3,755 micro-areas of Sao Paulo. Having the first quartile of VD as baseline and allowing for HD and HDI, the adjusted OR for children admissions were: 1.87(95%CI:1.53-2.93); 2.42(95%CI:1.93-3.02); 2.49(95%CI:1.98-3.12). When VD was treated as continuous, a significant association was observed (OR=1.009; 95%CI:1.004-1.014). Thus, for a vehicle per 500m<sup>2</sup> increase there was an increase of 0.9% in the chance of a child being hospitalized by RD. Similar associations were observed when the type of fuel (gasoline or diesel) and disease subgroups (asthma, pneumonia and upper respiratory infections) were considered separately.

**Conclusion:** These findings indicate that mobile sources of air pollution have great influence on hospitalization by RD among children in the city.