ESCAPE LUR DEVELOPMENT AT TWO DIFFERENT SCALES: CATALUNYA AND BARCELONA AREAS

Audrey de Nazelle, *Centre for Research in Environmental Epidemiology, Barcelona, Spain*
Marta Cirach, *Centre for Research in Environmental Epidemiology, Barcelona, Spain*
Rob Beelen, *Institute for Risk Assessment Sciences, Utrecht, The Netherlands*
Gerard Hoek, *Institute for Risk Assessment Sciences, Utrecht, The Netherlands*
Kees De Hoogh, *MRC-HPA Centre for Environment and Health, Imperial College of London, London, UK*
Mark Nieuwenhuijsen, *Centre for Research in Environmental Epidemiology, Barcelona, Spain*

Background/Aims: The objective of the study was to develop land use regression (LUR) models at two different scale levels (Catalunya and Barcelona) within the framework of ESCAPE project for assessment of long-term population exposure to air pollution.
Methods: Following the ESCAPE protocol we selected 80 locations spread over Barcelona (40), Sabadell (16) and Girona area (24) and collected NOx/NO_2 levels using passive samplers (Ogawa). We took 14-days measurements in 3 different seasons during 2009 in order to calculate the annual average. We also sampled NO_2 continuously during the year on a fixed station in each area for time adjustment.
We gathered geographical information and created predictor variables at each site using ArcGis 9.2. Using multiple linear regressions, we constructed models for the Catalunya and Barcelona areas separately.
Results: The Barcelona model (40 sites) explained 72% of the intraurban NO2 variability using four variables: high density residential area within 300 m, inverse distance to the nearest major road, inverse distance to the nearest street plus traffic intensity on that street and total length of road within 1000m. The Catalunya model explained 70% of the NO2 variability using three variables: roadlenght1000, traffic intensity within 25m and natural area within 5000m. Results for NOx were similar.
Conclusion: As part of the Europe wide ESCAPE project we have LUR models for Barcelona and Catalunya that can be linked to epidemiological studies in the study areas. Further work will include the comparison of these models with other LUR and dispersion models in the areas.