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## Activity Patterns and Pollution Exposure

### A Case Study of Melbourne

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### Abstract

In recent times there has been increasing interest in modelling policies to limit impacts of air pollution due to motor vehicles. Impacts of air pollution on human health and comfort depend on the relationship between the distribution of pollutants and the spatial distribution of the urban population. As emissions, weather conditions and the location of the population vary with time of day, day of month and season of the year, the problem is complex.

Travel demand models with activity-based approaches and a focus on the overall structure of activity/travel relations, not only spatially, but temporally can make a valuable contribution. They are often used to estimate emissions due to the travel patterns of city populations but may equally be used to provide distributions of urban populations during the day. A case study for Melbourne, Australia demonstrates the use of activity data in the estimation of population exposure. Additionally the study shows some marked differences in activity between seasons and even greater the differences in effect of that activity on exposure to air pollution. Numbers of cities will have seasonal pollutant patterns similar to Melbourne and others will benefit from exploring such patterns.

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