



The University of Chicago  
Department of Statistics  
Master's Seminar

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**“Semi-parametric Modeling of Effects of Air Quality  
Respiratory Health in Chicago Medicaid Population”**

**THURSDAY OCTOBER 27, 2005 at 3:30 PM  
110 Eckhart Hall, 5734 S. University Avenue**

**ABSTRACT**

Time-series analyses of the relationship between pollution and morbidity generally rely on Poisson regression models with year-specific smooth functions of time to account for unobserved time-varying confounders. This paper presents the analyses of daily time series asthma-prescription data over four summers in Chicago. Rather than choosing a pre-specified amount of smoothness in the adjustment for the confounding variable, we use Bayesian analysis to adjust for uncertainty due to the choice of smoothing parameter. In addition, our asthma-related outcomes (daily beta agonist prescription counts) are aggregated at the ZIP code rather than at the city level, thus allowing for neighborhood-specific effects. We explore the possibility that the ZIP code-specific effects follow a spatial correlation structure and fit the effects of ozone and PM10 using a distributed lag model.