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BLOOMBERG  
SCHOOL of PUBLIC HEALTH

*Department of Biostatistics*

# BIOSTATISTICS SEMINAR

## **Flexible Distributed Lag Models Using Random Functions with Application to Estimating Mortality Displacement from Heat-Related Deaths**

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### Abstract

As climate continues to change, scientists are left to analyze the effects these changes will have on the public. In this article, a flexible class of distributed lag models are used to analyze the effects of heat on mortality in four major metropolitan areas in the U.S. (Chicago, Dallas, Los Angeles, and New York). Specifically, the proposed methodology uses Gaussian processes to construct a prior model for the distributed lag function. Gaussian processes are adequately flexible to capture a wide variety of distributed lag functions while ensuring smoothness properties of process realizations. The proposed framework also allows for probabilistic inference of the maximum lag. Applying the proposed methodology revealed that mortality displacement (or, harvesting) was present for most age groups and cities analyzed suggesting that heat advanced death in some individuals. Additionally, the estimated shape of the DL functions gave evidence that highly variable temperatures pose a threat to public health.

**The Johns Hopkins Bloomberg School of Public Health  
Department of Biostatistics, Wednesday, January 11, 2012  
Room W2030 School of Public Health, 4:00-5:00pm (Refreshments: 3:30)**

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