



The University of Chicago  
Department of Statistics

MASTER'S THESIS PRESENTATION

---

**LIOR RENNERT**

Department of Statistics  
The University of Chicago

## **Analysis of Lung Cancer Incidence in Illinois**

**THURSDAY, February 17, 2011, at 4:00 PM**

110 Eckhart Hall, 5734 S. University Avenue

### ABSTRACT

In this paper, we explore a spatial analysis of lung cancer incidence in the state of Illinois by zip code, between 2003 and 2007. Such analysis is commonly referred to as disease mapping, and we summarize our findings as a visual representation of the estimated risk, known as a disease map. The cancer counts are fitted via a hierarchical Poisson model, and the spatial effects are modeled by a Gaussian Markov random field. We apply integrated nested Laplace approximations to perform a Bayesian analysis of our data, using different precision matrices for the spatial effects. In all of our analysis, we find statistically significant higher risks in the southern tip of the state, and significantly lower risks in the Chicago area.

---

Information about building access for persons with disabilities may be obtained in advance by calling Sandra Romero at 773.702-0541 or by email ([sandra@galton.uchicago.edu](mailto:sandra@galton.uchicago.edu)).