The University of Chicago
Department of Statistics

MASTER'S THESIS PRESENTATION

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Mortality Due To Pneumonia and Influenza in Texas: An Illustration of Disease Mapping

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ABSTRACT

In this paper, we explore statistical methods for spatial analysis of patterns of disease risk. Such analysis is often called disease mapping, and the resulting output is often summarized as a visual representation of the estimated risk, called a disease map. Using data on mortality due to pneumonia and influenza in the state of Texas over the period from 1990–1992, we illustrate disease mapping via a geostatistical approach. We apply a transformation to the observed death count in each county in Texas in order to fit a Gaussian spatial model, and we use kriging, or best linear unbiased prediction, to produce risk predictions. We find statistically significant evidence of spatial dependence. We also observe unstructured variability in excess of what we would expect from Poisson-distributed count data, possibly attributable to clustering due to the infectious nature of the disease under study.

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).