



# BRIGHAM YOUNG UNIVERSITY

## CS Department Colloquium Series



## Arden Pope

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**Thursday, November 9th, 2006**

1170 TMCB, 11:00 A.M.

### **Estimating the mortality effects of air pollution using spatial regression models**

#### **Abstract**

There is growing evidence that exposure to fine particulate air pollution contributes to respiratory and cardiovascular disease and death. Many daily time-series studies have observed that short-term (1-5 day) changes in pollution are associated with changes in daily death counts. However, studies that are considered to be most relevant to understanding the larger effects of persistent, repeated, or long-term pollution exposures are studies that have relied on long-term spatial exposure variability. Spatial analyses of pollution and mortality data, as early as 1970, reported that long-term, average concentrations of fine and sulfate particles were associated with annual mortality rates across U.S. metropolitan areas. However, these early population-based, cross-sectional, mortality-rate studies were largely discounted because they could not adequately control for cigarette smoking and other individual risk factors. Recent estimates of the mortality effects of long-term air pollution exposure have emphasized two prospective cohort studies, the Harvard Six-Cities study (Dockery et al. 1993; Laden et al. 2006), and the American Cancer Society study (Pope et al 1995, 2002, 2004; Jarrett et al. 2005). These studies estimate pollution-mortality associations using spatial regression models, controlling for cigarette smoking and various other individual risk factors. Both of these studies estimate surprisingly large and statistically robust mortality effects of fine particulate air pollution. This presentation will provide the interesting background, methods, and results of these two studies.

#### **Biography**

Dr. C. Arden Pope III is the Mary Lou Fulton professor of economics at Brigham Young University. He has a Ph.D. from Iowa State University (1981) where he studied economics and statistics. He has also had appointments at Iowa State and Texas A&M Universities and has been an IPH Fellow and visiting scientist in Environmental Health and Public Policy at the Harvard University School of Public Health. He has conducted research dealing with a wide range of natural resource and environmental issues, but most of his research over the last 15 years has focused on evaluating the costs of and health effects of air pollution. He has conducted or collaborated on many of the primary studies of the health effects of air pollution, has played a prominent role in reviewing and interpreting this literature, and is one of the world's most widely cited and recognized air pollution experts. Dr. Pope has been the recipient of various research and teaching awards including: the 1997 Sappington Memorial Lecturer, American College of Occupational and Environmental Medicine; the 2001 Mercer Prize jointly awarded by the American Association for Aerosol Research and The International Society for Aerosols in Medicine; the 2004 Utah Governor's Medal for Science & Technology; and the 2006 Karl G. Maeser Distinguished Faculty Lecturer, Brigham Young University.

**Donuts will be provided**