

**Project 9: Economic Impact Modeling and Analysis (Gordon et al.)**

This research is developing models and data for performing economic analysis in spatial detail with the objective of analyzing the economic impact of terrorism events and natural disasters.

**Modeling Area:** Economic Assessment

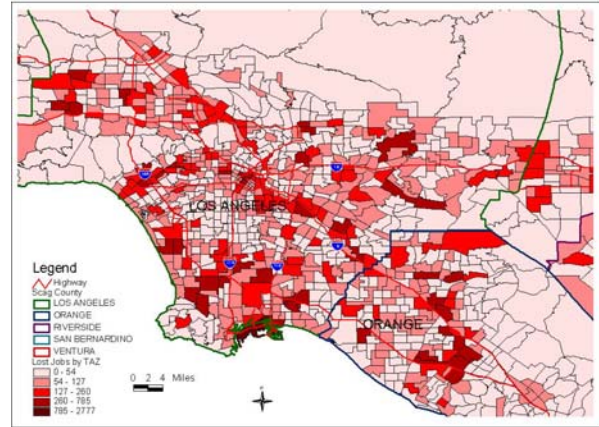
**Application Areas:** All

**Principal Investigators:** Peter Gordon, Harry Richardson, and James Moore

**Institution:** University of Southern California

**Other Researchers:** Bumsoo Lee

**Student Research Assistants:** Joongkoo Cho, Diego Prats, Yunkyung Kim, Jiyoung Park



GIS Spatial Distribution of Job Losses

**Brief Description:**

This research consists of a series of studies on the economic impact of a variety of terrorist attacks and natural disasters in the United States. These studies use either or both of two economic impact models, the SCPM (the Southern California Planning Model) and NIEMO (the National Interstate Economic Model) to analyze the economic effect of major disasters on various key infrastructure installations and other important sites. SCPM is an interindustry input-output model, based on transaction flows between intermediate suppliers and end producers, spatially specific to Southern California. The NIEMO model traces interregional economic effects of events across the US.

**Objectives:**

This research seeks to develop and apply methodologies and models that assess the economic impacts of various terrorist attacks and natural disasters. SCPM will be used to estimate dollar losses from selected events, and how these losses are geographically distributed throughout Southern California. NIEMO now has additional supply-side economic impact estimation capabilities, and these have been use to estimate the state-by-state and sectoral impacts of Hurricane Katrina, highlighting separate demand-side as well as supply-side effects. NIEMO is also being extended and tested so that production substitution effects can be estimated.

We are planning to assemble leaders in the economics of global terrorism and business implications to present papers and exchange ideas; publish and disseminate the findings in the Fourth CREATE Economics Symposium.

**Major Products and Customers:**

- The results of the economic analyses will be used by local planners and security officials.
- The economic analyses models will be used by researchers worldwide.
- Three CREATE Economic Symposia have been held. One book is in print; the second is in press (to appear Dec 2006 or Jan 2007) and chapters of the third will be submitted to Edward Elgar publishers in Dec 2006.

**Interfaces to other CREATE Projects:**

This work interfaces intensively with the Economics Assessment work of Adam Rose and Lester Lave, and all the CREATE case studies.

**Interfaces to non-CREATE Projects:**

This effort will interface directly with the FAZD DHS center on the overall evaluation of mad cow and foot-and-mouth disease and its economic impact assessments. We are collaborating with Battelle Institute researchers to learn how to apply economic impacts to possible terrorist attack scenarios.

**Technical Approach:**

1. Continue work comparing sectoral aggregation errors and compare to spatial disaggregation benefits of NIEMO.
2. Apply NIEMO to study of the state-by-state effects of oil and gas disruptions following Hurricanes Katrina and Rita..
3. Apply NIEMO to study of mad cow and foot-and-mouth disease scenarios.
4. Plan Fourth CREATE Economics Symposium, to be held at USC in August of 2007.
5. Prepare reports for journal submission.

**Major Milestones and Dates:**

1. Apply NIEMO to state-by-state estimates of the impacts of a foot-and-mouth disease terrorist attack scenario, January 2007.
2. Assessment of state-by-state effects of oil and gas refinery disruptions from Hurricanes Katrina and Rita – February 2007
3. Test and implement flexible versions of NIEMO to assess technological substitution effects, March 2007.
4. Fourth CREATE Economics Symposium -- August 2007.