# Researchers study costs of 'dirty bomb' attack in L.A.

April 23 2012

A dirty bomb attack centered on downtown Los Angeles' financial district could severely impact the region's economy to the tune of nearly $16 billion, fueled primarily by psychological effects that could persist for a decade.

The study, published by a team of internationally recognized economists and decision scientists in the current issue of Risk *Analysis*, monetized the effects of fear and risk perception and incorporated them into a state-of-the-art macroeconomic model.

"We decided to study a terrorist attack on Los Angeles not to scare people, but to alert policymakers just how large the impact of the public's reaction might be," said study co-author William Burns, a research scientist at Decision Research in Eugene, Ore. "This underscores the importance of risk communication before and after a major disaster to reduce economic losses."

Economists most often focus on the immediate economic costs of a terrorist event, such as injuries, cleanup and business closures. In this scenario, those initial costs would total just over $1 billion.

"Terrorism can have a much larger impact than first believed," said study co-author Adam Rose, a research professor with the USC Price School of Public Policy and USC's Center for Risk and Economic Analysis of Terrorism Events (CREATE). "The economic effects of the public's change in behavior are 15 times more costly than the immediate

damage in the wake of a disaster."

"These findings illustrate that because the costs of modern disasters are so large, even small changes in public perception and behaviors may significantly affect the economic impact," said Rose, who has published economic estimates of the 9/11 attacks, the Northridge Earthquake and other major disasters.

To estimate how fear and risk perception ripple through the economy after a major terrorist event, the researchers surveyed 625 people nationwide after showing them a mock newspaper article and newscasts about the hypothetical dirty bomb attack to gauge the public's reticence to return to normal life in the financial district.

The study translated these survey results into estimates of what economic premiums would be put on wages and what discounts shoppers would likely require in the aftermath of a terrorist attack.

After six months, 41 percent of those surveyed said they would still not consider shopping or dining in the financial district. And, on average, employees would demand a 25 percent increase in wages to return to their jobs.

"The stigma generated by dirty bomb radiation could generate large changes in the perceived risk of doing business in the region," said co-author James Giesecke of the Centre of Policy Studies at Monash University. "However, with regional economies in competition with one another for customers, businesses, and employees, it takes only small changes in perceived risk to generate big losses in economic activity."

The paper relied on one of 15 planning scenarios - the detonation of a dirty bomb in a city center - identified by the Department of Homeland Security in an effort to focus anti-terrorism spending nationwide.

Other authors of the study are Paul Slovic with Decision Research and the University of Oregon; Anthony Barrett of ABS Consulting in Arlington, Va.; Ergin Bayrak of the USC Annenberg School for Communication and Journalism; and Michael Suher of Brown University.

This study is part of a larger special issue of the international journal *Risk Analysis* which showcases USC CREATE's research on risk assessment research of terrorism events, natural disasters and their economic impacts. The special series, entitled "Risk Perception Behavior: Anticipating and Responding to Crisis," was born from a special workshop organized by USC CREATE to explore possible avenues of research leading to insights in risk analysis and includes 11 different studies.

Provided by University of Southern California