

## Research Synopsis

### **Project 12: The Dynamics of Public Response to a Terrorist Strike: Recommendations for Data Collection, Analysis, and Modeling (Burns)**

This project describes methods useful both for modeling the dynamics of risk perception and the communication of these dynamics to risk managers regarding disasters (especially terrorism).

**Modeling Area:** Economic Assessment

**Application Area:** Intelligence and Analysis

**Principal Investigator:** William J. Burns

**Institution:** Cal State University San Marcos

**Other Investigators:** Richard John, Garrett Asay, USC

#### **Brief Description:**

The purpose of this research is to contribute to a better understanding of needed methodology in the arena of risk perception research. It will focus on the dynamic and interactive nature of risk perception and risk-related behaviors. Regarding public perceptions and behaviors, it will look at what factors are critical to examine, how these variables are best measured and tracked, challenges to data collection, and best methods for analysis and modeling. Additionally, this project will articulate how these findings, generated from social science research, can be incorporated into models risk managers can use. The end goal is to facilitate behaviorally realistic risk management regarding disasters with a special emphasis on terrorism.

#### **Objectives:**

The purpose of this project then is to investigate the mechanisms driving perceptions of risk and risk related behaviors, and to communicate these findings in a way useful to risk managers and the public. The project has three fundamental objectives: 1) Develop a comprehensive and most importantly a dynamic understanding of risk perception as it relates to the threat of terrorism; 2) Facilitate “behaviorally realistic” risk management in response to disasters and the threat of terrorism; 3) Provide a methodological structure that allows voice for public concerns regarding disasters and the threat of terrorism. These objectives are describes as follows.

**1. Understanding Risk Perception.** To develop a comprehensive understanding of public perception of disaster and terrorism risk this study will propose research methods capable of examining the contributing roles of individual differences, cultural differences, event history and communication. It will also examine the effects of risk perceptions and risk-related behaviors with respect to disasters and terrorism. The project will also seek to increase the capacity to produce and communicate its findings by designing methods to improve the measurement of risk perception and its effects, and to track changes in risk perception over time, geographic area, subpopulations, and terrorist activity. Building on a substantial body of risk perception and policy research this project will propose a set of critical research questions designed to extend previous work in fundamental ways and provide recommendations to risk managers and policy makers to help them with their decisions.

**2. Behaviorally Realistic Risk Management.** To facilitate risk management that is grounded in behavioral research, the study will translate its findings to address the needs of risk managers in three areas: 1) Mitigation of Risk; 2) Communication of Risk; and 3) Decision Making. This report will explore the connection between findings from social science research and modeling

useful to risk managers. For example, system dynamics modeling is especially suited to policy analysis in this context because it allows the workings of complex systems to be described through simulation and mitigation strategies to be tested. Behavioral researchers and risk managers can communicate through a common model, moving back and forth between refining their description of a systemic response to different threats and examining the efficacy of the policies they prescribe.

**3. Providing a Voice for Public Concerns.** Public apprehension about disasters and the threat of future terrorist strikes is natural and a concern that can be addressed by effective communication. Communicating about disasters and terrorism risk is a two-way process. Carefully crafted and ongoing risk perception research (e.g. national survey) will give the nation's citizens a chance to express their concerns and allow researchers and ultimately risk managers an opportunity to learn and better serve them. Likewise, the reporting of these results in academic and more civic forums will allow the public to better grasp what is being done and to participate in their own protection. This project will articulate how such research might be accomplished.

### **Interfaces to other Center Projects**

This work will maintain a close interface with the Dr. von Winterfeldt's risk analysis and economics projects (especially work being done by Adam Rose).

### **Major Products and Customers:**

Project deliverables will consist of a report that will: a) summarize the research literature regarding public risk perception in the domain of disasters; b) summarize the findings and recommendations that have been reported from national surveys (since September 11) pertaining to the public's reaction to terrorism; c) summarize the findings and recommendations of a risk perception workshop conducted at CREATE; d) articulate the needed methodology to fully examine the dynamic and interactive nature of risk perception and risk-related behaviors. Consistent with this purpose, it would look at what factors are critical to examine, how these variables are best measured and tracked, challenges to data collection, and best methods for analysis and modeling.

Customers: The clients of this report are primarily policy makers at all levels in the DHS.

Products: Research publications, presentations and reports.

### **Technical Approach:**

The methods described will build on previous research in the risk perception, risk management, survey, and statistical literature. Special focus will be given to recent developments in the area of latent growth and system dynamic modeling.

### **Major Milestones and Dates:**

1. Conduct Risk Perception Workshop with leading scholars, June 2006 *Completed.*
2. Summarize risk perception literature and national surveys pertaining to disasters; summarize Risk Perception Workshop findings and recommendations – September 2006 *Completed.*
3. Describe methodological approaches to capture the dynamic aspects of public risk perception -- December 2006 *Partially Completed.*
4. Present research findings and recommendations at the SRA Conference -- December 2006.
5. Report completed and ready for publication and distribution to researchers at other DHS centers- March 2007.