



~ Making the Nation Safer through Research ~

Mission

CREATE's mission is to improve our nation's security through the development of advanced models and tools for the evaluation of the risks, costs, and consequences of terrorism and to guide economically viable investments to counter terrorism. CREATE accomplishes its mission through an integrated program of research, education, and outreach, spanning the disciplines of engineering, social sciences, and information science.

Leadership

Dr. Stephen Hora is the Director of CREATE. He is an expert in decision and risk analyses with particular interest in the use of subject matter experts, statistical modeling, and the analysis of technological, natural, and environmental hazards. Dr. Hora is a Research Professor of Industrial and Systems Engineering at the Viterbi School of Engineering and of Public Policy and Management at the School of Policy, Planning, and Development at the University of Southern California.

Education

CREATE has developed several programs to educate current and future homeland security leaders. In addition to engaging more than 100 research assistants, CREATE has developed homeland security specializations for a Master's of Public Policy and a Master's of Operations Research, with emphasis on risk-based economic analysis. A new online graduate certificate in Homeland Security & Public Policy is currently offered. New coursework based on CREATE's research has been developed and shared with hundreds of university students. Professional short courses are also offered through the Executive Program in Counter-Terrorism and the Aviation Safety & Security Program.

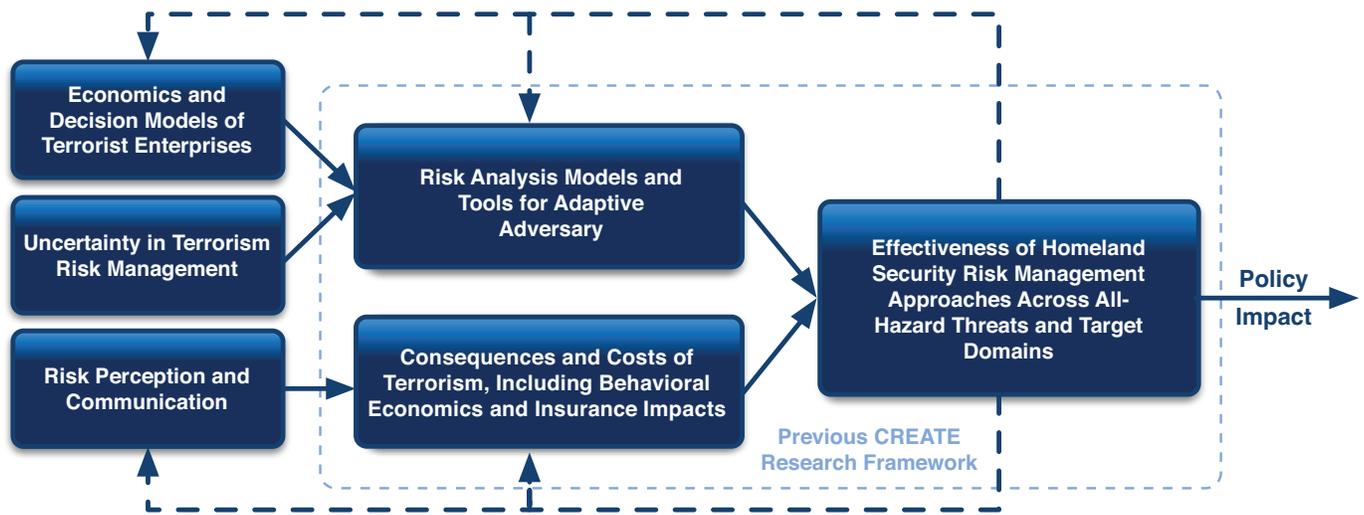
Research

CREATE's research program is based on the modeling and analysis areas shown in the figure on the back.

Table with 7 columns: Explosives, Chem/Bio, CCI, Borders/Maritime, Human Factors, Infrastr./Geophys. and 3 rows: Risk Assessment, Economic Assessment, Risk Management. Includes legend for Current Projects and Potential Project Collaboration.

CREATE's research program expands analytical frameworks to better anticipate and prepare for the nation's greatest threats, spanning six interrelated themes:

- First U.S. Department of Homeland Security (DHS) Center of Excellence
• Based at the University of Southern California (USC)
• Current university partners include: California State University, Long Beach\*, California State University, Los Angeles\*, Claremont McKenna College, Cornell University, Georgetown University, Haskell Indian Nations University\*, Howard University\*, Monash University, Australia, New York University, Princeton University, Stanford University, SUNY Buffalo, TNO, Netherlands, University of California, Irvine, University of California, Los Angeles, University of California, San Diego, University of Maryland, University of Pennsylvania, University of Puerto Rico, Mayaguez\*, University of Texas at Dallas, University of Virginia, University of Wisconsin, Vanderbilt University
\* Minority Serving Institution
• 75 Faculty and Researchers
• 100+ Students Trained
• 30 Research Projects Per Year
• 25 Software Tools/Models Completed or in Development



1. **Management of Risks from Intelligent, Adaptive Adversaries:** will extend game theory, risk analysis, terrorist preference modeling, and decision analysis to account for the strategic nature of terrorist decision-making with regard to countermeasures.
2. **Economic and Decision Models of Terrorist Enterprises:** will advance the state of knowledge on the motivations, organization, recruitment, and operations of terrorists organizations.
3. **Uncertainty in Terrorism Risk Management:** will develop methods to assess threats and to allocate resources to countermeasures in a high-stakes, highly uncertain environment.
4. **Risk Perception and Communication:** will examine the dynamics of public response, societal consequences, and risk and crisis communication in reducing the consequences of fear and other indirect impacts of terrorism, both preceding and following events.
5. **Consequences and Costs of Terrorism:** will assess consequences of terrorism, especially their direct and indirect economic impacts, explore the benefits of resilience, and use behavioral economics to examine the impact of how individuals respond to threats and hazards, including the role for insurance as a mitigation tool.
6. **Evaluating the Effectiveness of Homeland Security Risk Management Approaches:** will investigate and apply new analytical approaches to assess the benefits of homeland security programs across all hazards, threats, and target domains and inform policy decisions.

## Application Areas

While CREATE focuses on medium and long-term research that advances the knowledge base and the intellectual capacity

of our nation to counter terrorism, we also are committed to having an impact on short- and medium-term policy debates. CREATE achieves this impact by applying fundamental research concepts to specific problems relevant to DHS and the nation. Applications of CREATE methodologies are developed in areas linked to the operational divisions of DHS in close collaboration with DHS leaders in these units.

Examples are given below:

### *Borders/Maritime*

- Development of a risk management course for ICE agents and officers
- Port operations modeling for security risk management and resource allocation

### *Explosives*

- Risk and economic analysis of MANPADS (Man-Portable Air Defense Systems) attacks
- Explosives detection technologies

### *Infrastructure/Geophysical*

- Risk analysis of major attacks on regional electricity systems
- Decision models to improve allocations of funds to critical infrastructure assets

### *Chem/Bio*

- Risk and economic analysis of a major radiological attack on ports
- Support of economic and risk assessment of 30 biological threats conducted by the National Biodefense Analysis and Countermeasures Center

### *Human Factors*

- Decision analysis models of terrorist preferences for weapons types and targets
- Models of terrorist attacks as complex projects

### *Command/Control/Interoperability*

- Game theoretic randomization of operational units to minimize vulnerability