



Homeland Security

Science and Technology

Center for Risk and Economic Analysis of Threats and Emergencies (CREATE)

A DHS Emeritus Center of Excellence*

As the Department of Homeland Security's first University Center of Excellence, CREATE serves our nation through advanced models, tools, and analyses of the risks, costs and consequences of threats to our nations and through assessment of strategies to mitigate risks and respond to emergencies. CREATE uses multidisciplinary approaches to assess and manage risks, posed by adversaries, failures, and nature.

LAUNCH ▶ 2004

PARTNERS ▶ More than 30 university, government, and industry partners

EXPERTISE ▶ Risk analysis, economic consequence analysis, decision analysis, threat analysis, vulnerability analysis, multi-objective evaluation, game theory, terrorist behavior

DHS ALIGNMENT ▶ U.S. Customs and Border Protection, Transportation Security Administration, U.S. Coast Guard, Cybersecurity, Infrastructure Security Agency, Domestic Nuclear Detection, National Biosurveillance Integration Center

Research and Education Capabilities

- Risk analysis assessing terrorism threats and vulnerabilities
- Economic consequence analysis for catastrophic events
- Decision analysis evaluating disaster risk mitigation
- Applications to terrorism, natural disasters, infrastructure, supply chains, cyber security, biological threats and transportation security



A nationwide consortium led by:

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Feedback from Our Partners

“CREATE is an exceptional academic partner with the U.S. Coast Guard Research and Development Center. CREATE, and their team of world class researchers, explored the use of Bayesian Game Theory within components of the Ports, Waterways and Coastal Security (PWCS) mission. The jointly developed game theory application, PROTECT [Port Resilience Operational Tactical Enforcement to Combat Terrorism], significantly influenced current and future maritime security policy.”

Dr. Joe DiRenzo III, Director of Research Partnerships
U.S. Coast Guard Research and Development Center

*“TSA greatly values our partnership with the Center for Risk and Economic Analysis of Terrorism Events (CREATE) and its team of experts. **This partnership provides TSA with access to world-class academic resources to better manage risk, improve the security of the Transportation Sector, and to proactively address operational challenges.**”*

Jerry Booker, Director, Risk Management Division
Transportation Security Administration



University Partners

California State University
Georgetown University, D.C.
Ohio State University
University of Buffalo, NY
University of Oregon
University of California at San Diego
University of Maryland, Baltimore County, MD
University of Wisconsin-Madison, WI

Government Partners

California Department of Corrections
California Energy Commission
California Emergency Management Agency
Cybersecurity and Infrastructure and Security Agency
Defense Threat Reduction Agency
Joint Regional Intelligence Center
Los Angeles International Airport
Ohio Highway Patrol
Ports of Los Angeles and Long Beach, California
Transportation Security Administration
U.S. Coast Guard
U.S. Customs and Border Protection
U.S. Department of Justice

Enterprise Partners

ADAC-ARCTIC, University of Alaska
CAOE, Arizona State University
CIRI, University of Illinois
Decision Research
Econometrica, Inc.
Lawrence Berkeley National Laboratory
Leidos Corporation
Pacific Northwest National Laboratory
RAND Corporation
SENTRY, Northeastern

Current Work

Benefit-Cost -Risk Analysis
Electrical Grid
Emergency Response
Infrastructure Protection
Pandemics
Supply Chain Reliability
Technology Transition
Weapons of Mass Destruction

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Border Protection
Event Security for Olympics
Wildfire and Earthquake Risk Reduction



Impacts

Thwarting adversaries with security randomization software

The Los Angeles Airport (LAX) police, Federal Air Marshal Service and U.S. Coast Guard all use versions of the CREATE-developed Assistant for Randomized Monitoring Over Routes (ARMOR) tool, which randomizes security schedules and plans, making it difficult for adversaries to avoid security forces when plotting illegal activities.

Rapid estimates of the economic consequences of security threats

The CREATE-developed Economic Consequences Analysis Tool (E-CAT) enables DHS and DOD analysts to evaluate the potential economic impacts of terrorist attacks, natural disasters, and technological accidents on U.S. gross domestic product and employment. The tool enables policymakers and analysts using the Homeland Security National Risk Characterization register to make objective resource allocation comparisons.

Innovative decision tools to improve security

CREATE provided the U.S. Customs and Border Protection (CBP) with an independent peer-reviewed economic analysis. It showed that increasing staffing by one CBP officer at each of 33 land, sea, and air ports of entry for primary screening adds \$65.8 million in U.S. Gross Domestic Product, \$21.2 million in time value savings, and 1,094 annual jobs to the U.S. economy. Study results were part of congressional testimony and resulted in a vast increase in Congressional appropriations to hire more border agents.

Agent-Based simulation for high-risk emergencies

By incorporating realistic human behavior and architectural design factors, we aim to create a decision-support tool that enhances safety practices, informs policy guidelines, and improves building standards. This work is crucial to ensuring better law enforcement preparedness in responding to emergencies.

Economic consequences of pandemic shutdowns

The CREATE Economic Consequence Analysis Framework was used to estimate the macroeconomic impacts of COVID-19. The research found that the two major causes of the more than \$14 trillion reduction in US Gross Domestic Product over five years were 1) mandatory closures of businesses, and 2) people avoiding workplaces, schools, public assembly locations, and public transit for fear of infection.