Statement of Work
Surveillance of a Comparative Set of Homeland Security Risks
Russell Lundberg, Sam Houston State University

This research shall examine perceptions of homeland security risk with consideration of both absolute and relative perceptions of risk to identify the dynamics of relative risk perception following an event.

Project Technical Description

Keywords: Risk perception, relative risk
1. **Theme area:** Risk Perception and Communication
2. **Principal Investigator:** Russell Lundberg
3. **Institution:** Sam Houston State University
4. **Co-investigators:** none
5. **Research Transition Lead:** Russell Lundberg
6. **Keywords:** risk perception, surveillance, relative risk

7. **Brief description:**
While some research has been done on perceptions of homeland security risk, both separate from and following events, it has largely focused on a specific hazard and not on a range of hazards. Building off of previous CREATE-sponsored research (PI: Henry Willis), this research will examine perceptions of risk in the U.S. public using Amazon Mechanical Turk across a set of ten hazards, including natural disasters, terrorist events, and major disasters. After establishing a baseline level of concern for each of the risks, money will be held in reserve for examining perceptions following a homeland security event, should one occur. One contributions of this research is the assessment of risk both individually and relative to the other hazards; if an event occurs we would expect the concern for that hazard to increase, but whether perceptions of risk for similar hazards increase or decrease and over what timeframe may be useful as well.

8. **Research Objectives:**
This research is designed to identify perceptions of homeland security risk relative to other risks following a homeland security event. While it is well known that a people become more concerned about a risk if there is a recent event of that type that is fresh in an individual’s memory, it is not as clear the extent to which a recent homeland security event of one type affects perception of homeland security events of other types. For example, a terrorist bombing may increase concern for a range of terrorist scenarios but not natural disasters, or perhaps a hurricane response perceived as a failure will increase concern for all disaster scenarios. These spillover effects, of how perceptions of one homeland security risk are correlated with another, are unclear but may be important for disaster planning and response (see issue 42(3) of Risk Assessment for a range of studies on risk perception and disaster management, and the introduction by Burns and Slovic, 2012).

There are two specific objectives related to this research. The first is to generate a baseline of concern, on both and absolute scale and relative to other homeland security hazards, to see if the concern for various hazards are stable over time. The second is to identify how an event affects concern for that
hazard and for other homeland security hazards, as well as how long those concerns persist for both the experienced hazard and other related hazards.

9. **Research Transition Objectives:**
This research shall provide information describing concern over risks in both on their own and relative to other hazards, as well as information describing how perceptions of risk change after a homeland security event. This research may be useful to DHS’s Office of Risk Management and Analysis (RMA). From their mission, “RMA provides risk and decision analysis support to inform a range of prioritization, strategy, and policy decisions.” Further understanding of relative concerns over the varied risks in the homeland security domain, and understanding of how those concerns can vary following an event, can be useful for providing risk analysis and integrating homeland security risk management approaches.

10. **Interfaces to CREATE Projects:**
Directly related to previous CREATE projects under PI Henry Willis testing the application of the Deliberative Method for Ranking risk on the lay public. (See next section for details.)

11. **Previous or current work relevant to the proposed project:**
Previous CREATE work under PI Henry Willis developed risk information sheets on 10 homeland security hazards, including terrorism, natural disasters, and major accidents; these hazard sheets were used in a qualitative comparative risk assessment (Lundberg 2013). An extension on this research compared those risk rankings to perceptions of risk solicited from a nationally representative survey, identifying differences consistent with system 1 and system 2 thinking. The information framing the risk and survey questions for this research have already been developed in these prior studies, and applying them to Amazon Mechanical Turk will require relatively less effort. Three papers are under review from the first study and a fourth is being prepared from the follow-on study.

12. **Major Deliverables, Research Transition Products, and Customers:**
This research will develop a baseline for relative levels of concern for homeland security hazards and will examine the dynamics of those relative concerns following a homeland security event. This research will culminate in a research article describing the dynamics of relative consideration of risks following a homeland security event. Additionally, research developed in this project will be shared with DHS’s Office of Risk Management and Analysis. A webinar will be arranged to share results with RMA prior to submission or publication of an article.

13. **Technical approach:**
This research involves two related objectives—to identify a baseline level of concern for a set of homeland security hazards and identify the extent to which concern changes for those hazards in the aftermath of a homeland security event. Both the baseline and incident levels of concern shall be identified through the execution of an internet-based survey and analysis of that survey.

The risk rankings in the survey shall be informed using risk assessments for a set of 10 homeland security hazards. Estimates of risk for a set of 10 homeland security hazards have been estimated in previous research under funding from CREATE. These hazards were selected to comprise an interesting set of risks, including: terrorist events, natural disasters, and major accident; large events and small events;
and common, rare, and completely unexperienced events. The risk assessments used to inform the risk rankings in this project shall utilize the assessments of those 10 hazards. No additional risk assessments or refinements on these risk assessments shall be created for this project.

Repeated cross-sectional surveys on Amazon Mechanical Turk shall be used to identify individuals’ perceptions of risk for the set of 10 homeland security hazards. Amazon Mechanical Turk has proven useful for identifying homeland security concerns in the past (Rosoff, et al. 2013a, Rosoff et al. 2013b, Rosoff and John 2012). Individuals shall be asked: 1) their absolute levels of concern for each of the hazards; 2) whether they have ever been harmed by that hazard and if so whether the harm was to them personally, to their friends or family, or through media exposure; and 3) their relative levels of concerns for each of the hazards together in a single risk ranking. The procedure for these risk rankings shall be drawn from a previous study funded by CREATE where these questions were asked. This previous survey was nationally representative but was not repeated. Median response time on the previous survey was approximately five minutes, and additional time to collect demographic information should be approximately one minute. Each individual survey should be completed in less than 24 hours.

To identify the baseline concern, three initial scheduled surveys shall be conducted two months apart to establish a baseline on perceptions of risk. These shall be performed in August, October, and December, 2015. Each survey shall have a sample size of approximately 150 respondents, reflecting the precision of estimates identified in a prior survey.

Four additional surveys shall be conducted in response to an event selected as serious. Such a serious event may include: a particularly deadly hurricane, earthquake, or tornado; a well-publicized disease outbreak (such as a pandemic influenza or the Ebola outbreak of 2014); a major oil spill (on par with the Exxon Valdez spill of 1989 or the Deepwater Horizon spill of 2010) or chemical release; or a terrorist mass-casualty event. The determination of whether an event constitutes a “serious event” shall be made at the discretion of the P.I. As these surveys shall be reactive to events, their timing shall not be scheduled. However, as the surveys are already prepared, they shall be available and shall be fielded within 48 hours of an event (unless the event is cyber in origin and internet surveys are unavailable). These additional surveys shall be conducted: immediately after the event; two weeks after the event; four weeks after the event; and eight weeks after the event.

The data from these surveys shall be analyzed following their completion, sometime in late spring and early summer 2016. Analyses of risk perceptions shall include cross-sectional and temporal analyses. Rankings shall be compared across hazards within each survey, as well as across surveys to examine their stability over time. Additional, analyses shall be conducted following an event similar to Burns et al. (2012).

14. Major Milestones and Dates:
   - Adaptation of survey materials for Amazon Mechanical Turk: August 2015
   - Initial baseline survey: August 2015
   - Second baseline survey: October 2015
   - Third baseline survey: December 2015
   - Event related surveys: Winter 2015/Spring 2016, as needed
15. **References:**


16. CV:

RUSSELL LUNDBERG
Russell.lundberg@shsu.edu  936.294.3634

EDUCATION

Pardee RAND Graduate School  Santa Monica, CA
PhD in Policy Analysis  completed 2013
M.Phil. in Policy Analysis  completed 2009

University of Maryland, School of Public Affairs  College Park, MD
MPP, concentration in social policy  completed 2004

Hope College  Holland, MI
B.A. in Physics and Theatre, minor in communications  completed 1996

PROFESSIONAL EXPERIENCE

2014-present  Assistant Professor of Security Studies, Sam Houston State University, Huntsville, TX
2014-present  Adjunct, RAND Corporation, Santa Monica, CA
2007-2014  Assistant Policy Analyst, RAND Corporation, Santa Monica, CA

SELECTED PUBLICATIONS, MONOGRAPHS, AND PEER-REVIEWED REPORTS


SELECTED HONORS, LEADERSHIP, AND AWARDS

2011-2012 Harold Brown Fellowship, Center for Global Risk and Security, RAND Corporation
2011-2013 National Security Research Division dissertation grant, RAND Corporation
2007 Award for Excellence, President’s Council for Integrity and Efficiency, for the Department of Homeland Security Office of Inspector General Katrina Review team