Facing Hazards and Disasters: Understanding Human Dimensions

Michael K. Lindell
Hazard Reduction & Recovery Center
Texas A&M University

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Table of Contents

- Introduction
- Societal Changes Influencing the Context of Research
- Hazard Mitigation, Emergency Preparedness, and Recovery Preparedness
- Disaster Response and Recovery
- Interdisciplinary Hazards and Disaster Research
- International Research
- The Role of State-of-the-Art Technologies and Methods for Enhancing Studies of hazards and Disasters
- Knowledge Dissemination and Application
- The Present and Future Hazards and Disaster Research Workforce
A Simplified Model of the Hazards and Disaster Management System

Pre-Impact Interventions
- Mitigation practices
- Emergency preparedness practices
- Recovery preparedness practices

Hazard Vulnerability
- Hazard exposure
- Physical vulnerability
- Social vulnerability

Extreme Events

Post-Impact Responses
- Emergency Activities (planned/improvised)
- Recovery Activities (planned/improvised)

Disaster Impacts
- Physical
- Social

Hazard Vulnerability

- Hazard exposure
  - Probability that an event of a given physical magnitude and scope will occur in a given location

- Physical (structural) vulnerability
  - Probability that an event of a given magnitude will cause various damage states

- Social vulnerability
  - Probability that identifiable persons or groups will lack the capacity to anticipate, cope with, resist, and recover from the hazard impacts
Disaster Impacts

- **Physical impacts**
  - Casualties: Deaths and injuries
  - Damage: Buildings, lifelines, and vehicles

- **Social impacts**
  - Psychological: Cognitive (beliefs about hazards and hazard adjustments) and affective (emotional reactions)
  - Demographic: Emigration from and immigration to the impact area
  - Economic: Direct and indirect losses to households, businesses, and governments
  - Political: Attribution of blame for impacts and allocation of community resources for response and recovery
Hazard Mitigation Practices

- **Hazard source control**
  - Interventions that control hazard generation
- **Community protection works**
  - Interventions that protect specific geographical areas
- **Land use practices**
  - Interventions that limit development in hazard prone areas
- **Building construction practices**
  - Interventions that reduce the vulnerability of structures and infrastructure
- **Contents protection practices**
  - Interventions that reduce the vulnerability of building contents
Response Preparedness Practices

- Planning processes that develop the capacity to perform fundamental emergency response functions
  - Emergency assessment
  - Hazard operations
  - Population protection
  - Incident management
- Training and equipping activities
- Drills, exercises, and incident critiques
Recovery Preparedness Practices

- Planning processes that develop the capacity to perform fundamental recovery functions
  - Damage assessment
  - Debris removal
  - Infrastructure restoration
  - Housing recovery
  - Economic recovery
  - Psychological recovery
  - Political recovery
Household Hazard Adjustment Adoption

Channel access and preference
Message content
Source characteristics
Environmental cues
Social cues
Exposure, attention, interpretation
Threat perception
Protective action perception
Behavioral intentions
Situational demands/facilitators
Actual behavior
Situational constraints
Research Recommendations

- Refine the concepts and methods involved in hazard vulnerability analysis.
  - Hazard exposure, physical vulnerability and especially social vulnerability
- Examine the dynamics of hazard vulnerability and identify better interventions for addressing this problem.
- Assess the effectiveness of existing programs for hazard mitigation and emergency preparedness (including risk communication).
- Develop better models of the adoption of mitigation and preparedness measures—including hazard insurance purchase.
  - Incentives, sanctions, and risk communication
Research Recommendations

- Develop better models to guide decisions about hazard operations and protective actions in emergencies.
- Assess the extent to which hazards/disaster research findings are being implemented in local emergency operations plans, procedures, and training.
- Examine the effectiveness of procedures for conducting training, exercises, and critiques.
- Identify the factors that promote the adoption of more effective disaster recovery preparedness programs.