

*Competing values in disasters:
Mass care urgency to evacuate
versus resident false
confidence to stay*

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Competing values in disasters: Mass care urgency to evacuate versus resident false confidence to stay

Problem

- As FEMA FRP ESF#6 provider, the Red Cross problem-driven mission relies on driving forces of provisioning, mobilization, and enablement by overcoming juxtaposed restraining forces of capitalization, volunteerism, and bureaucracy respectively³
- Many residents do not taking action after knowing of evacuation warnings¹
- There is evidence of upward trends in the intensity of the strongest hurricanes²

Purpose

- to develop a model which could be generalized to improve social policy for natural disaster preparation
- interprets competing values in operational performance that govern mass care delivery in crisis

Approach

- Research Objectives
- Literature Review
- Research Questions
- Methods: Quantitative & Qualitative
- Conclusions / Discussion

Research Objectives

- Develop a behavior model to represent why people do not evacuate from natural disasters, even when warned
- Develop a role classification taxonomy to represent competing values that emergency responders (ER) perceive when providing social service in crisis
- Test the behavior model with hurricane survivors (to understand what they may have perceived)
- Interpret the perceptions using the competing values taxonomy to suggest improvements for mass care emergency management agency

Literature Review: Behavioral Intent

Central theories: behavior cause-effect

- Theory of Reasoned Action (RA) [developed by Martin Fishbein first as Attitude Theory⁴, based on the principles of Expectancy Theory, Subjective Expected Utility Theory, and the Theory of Propositional Control⁵] proposes the immediate determinant of behavior is a **person's intention to perform** the behavior, driven by: **personal attitude toward** performing the behavior, and perceived social approval, which is referred to as **subjective norm**⁴.

Contributing theories: risk and decision making

- Uncertainty, quantification, risk analysis⁶
- Affect, Attribution, Bias, Heuristics, Hierarchy Levels, Pygmalion Effect, Bounded Rationality, Balance Theory as well as content and process motivation theories, have been applied to explain decision making⁷

Literature Review: Policy

As policy: Presidential Policy Directive 8: National Preparedness (PPD-8) describes preparedness as the shared responsibility of the entire community⁸.



- Individuals play a critical role in preparedness and are expected to prepare themselves and their families for all types of potential incidents (e.g., education, training sessions, demonstrations), including preparedness of those with special needs¹⁰
- Individuals in areas of high risk are expected to have prepared for and be self-sufficient for a minimum of 72 hours⁹
- FEMA's FRP-ESF#6 mass-care emergency support functions stipulate Red Cross responsibilities as the primary agency over eight U.S. Departments' four subordinate agencies⁹
- Federal support agency personnel assigned to ESF #6 (immediate feeding, shelter, and emergency first aid services) will work in accordance with their parent agency rules and regulations, and will be self-sufficient for a minimum of 72 hours following a disaster occurrence⁹

FRP: Federal Response Plan

NPG: National Preparedness Goal

Literature Review: Mission to Perform

Red Cross mission (mass care agency):

- Prevents and alleviates human suffering in the face of emergencies by mobilizing the power of volunteers and the generosity of donors. It does this through humanity, impartiality, neutrality, independence, voluntary service, unity, and universality as its fundamental principles¹⁰

Relationship of competing values to performance

- Judging the effectiveness [performance] of any organization ultimately involves the question of values¹¹
- Organizational excellence is a subjective construct anchored in stakeholder preferential values¹²

Literature Review: Theoretical Disruption

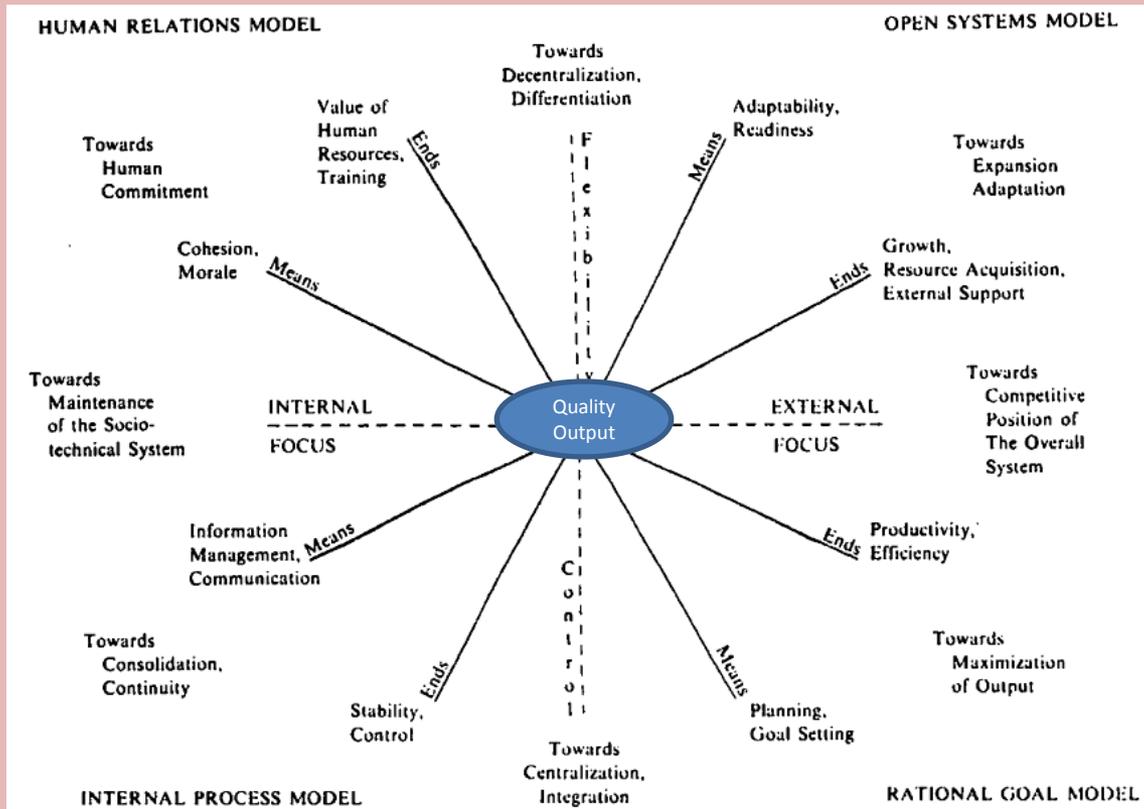
- Red Cross evolved from a humanitarian initiative of Clara Barton (1881), recognized by under Geneva Convention (1882) to become an international humanitarian responder in crisis response¹³, and domestically under Congressional Orders (1900-2007) initiated by Presidential declaration¹⁴
- Saving lives during a disaster is a problem-driven activity which requires governance^{15,16}
- Competing values quadratic model: rational goal, internal process, open systems, and human relations¹⁷

Literature Review: Competing Values

... effectiveness is a value-based judgment about the performance of an organization^{10/17}

collaborate, human resources, human capital, training, professional development, morale, conflict, resolution, cohesion, functional role, involve, motivate, security

information, communication, process, scalability, readiness, flexible, adaptable, innovation, project management, records, playbook, organizational



scalable, flexible, adaptable, innovation, audit, character, funding, material, prepare, supply-chain, collaborate, partner

compete, productivity, planning, efficiency, effectiveness, financial, success, stakeholder, experience, lessons, readiness, capability, response, capacity

Graphic source: Quinn, R. E., & Rohrbaugh, J. (1981). p. 136
Quinn, R. E., & Rohrbaugh, J. (1983). p. 369

Research Questions: Qualitative (themes)³

Driven by Literature Research

- **Competing Values (seeks optimal balance)**
 1. ...organizational performance criteria...
 2. ...project management criteria...
 3. ...the role of...
 4. ... management development of...
 5. ... relations, process model...
- **Human Relations (Commitment)**
 6. ... volunteer service experience...
 7. ...personal and social capital psychology ...
 8. ...motivations for volunteering...
 9. ...social, psychological functions of volunteering...
- **Internal Process (Continuity)**
 10. ...social network connectedness...
 11. ...effective governance structure...
 12. ... disaster response effectiveness coordination...
 13. ...sustainable economic development...
 14. ...institutional matrix...
- **Open Systems (Adaptation)**
 15. ...optimal solution produced...
 16. ...perturbed instances...
 17. ... vehicle routing...
 18. ...product demand...
 19. ...delivery point...
 20. ...computation time...
 21. ... disaster relief response operations management...
- **Rational Goal (Maximization)**
 22. ...natural disaster relief...
 23. ... high-availability, disaster recovery supply chain...
 24. ...pre-planning...
 25. ...disaster services human resource system...
 26. ...need for effective high availability disaster recovery...
 27. ...supply-chain logistics management...
 28. ...emergency disaster response...

... to bridge the gap between emergency response performance with survivor attitude

Research Questions: Quantitative (hypotheses)¹

H1: behavioral intent will be a significant predictor of actual behavior (*ex post facto*)*

H2: socio-demographic factors (except age and gender) will not be related to evacuation*

H3: younger people (lower age) will be less likely to choose to evacuate*

H4: males (gender) will be less likely to choose to evacuate*

H5: estimated value of real estate homestead would be positively related to evacuation likelihood

H6: negative disaster experiences will modify personal attitude increasing likelihood to evacuate (this refers to personal subjective norm in *RA*)

H7: higher credibility towards disaster message sources will modify subject norms increasing likelihood to evacuate (this refers to social norm with respect to peer and neighbors in *RA*)

*Indicate replicated hypotheses based on *a priori* studies, designed to validate the model.

Methods: Quantitative Survey¹

Surveyed 1000 residents of the upstate New York area (online)

- Survey was released in early December 2011 three months after Hurricane Irene, to reduce episodic memory fading of the event intensity over time (after data analysis, final N=401)

Developed modified RA survey, added factors:

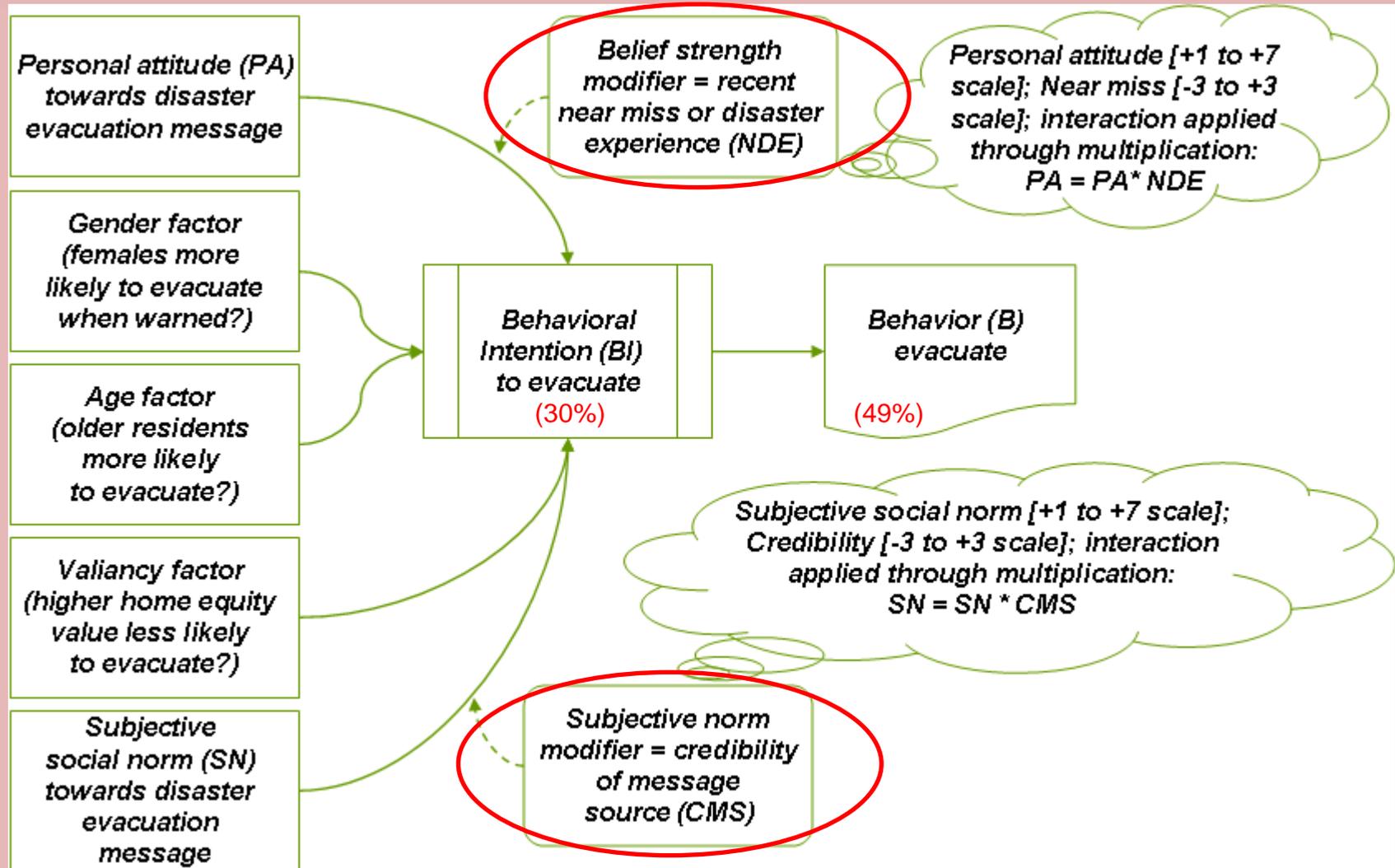
1. Impact of recent near miss accident or disaster (negative/positive)
2. Credibility of evacuation message source (e.g., neighbor, media, etc.)

Method: Survey Instrument Validity¹

- Participant-to-item ratio for the Personal Attitude (PA) and Subjective Norm (NA) factors was 41:1; surpassed 10:1 benchmark, sample size of 401 was well over minimum of 100¹⁸
- Factor Analysis (FA): all items loaded at over 0.5 on the correct factor, PA or SN, respectively, capturing 59% of the total variance.
 - Comparable to *a priori* findings of loadings which ranged from +0.44 to +0.88¹⁹
- PA had an alpha reliability of 0.87 and SN was 0.69

- Behavioral Intent (BI) dependent variable mean of 0.3 indicates that 30% of the respondents stated they intended to evacuate in response to the public warning message for Hurricane Irene

Methods: Behavior Model¹ (for survivors)



Conclusion: Why Survivors Did Not Evacuate¹

Personal attitude modifier = near disaster experience (NDE)

- Near disaster experience that was easily overcome or did not affect anyone resident knew, **tended to build false confidence** in a person's ability to avoid being impacted by a disaster.
- Therefore, this uneventful near disaster experience impacted a resident's attitude towards evacuating, to the extent that a high level of 'disaster confidence' raised self-efficacy causing the resident to intend to ignore evacuation warnings.

Social norm modifier = credibility of message source (CMS)

- Social norm as modified by trust/credibility of message source was **only weakly significant**
- Could mean residents with home equity do not generally rely on opinions of others (relatives, friends, neighbors, media spokespeople) regarding an evacuation warning

Conclusion: Competing Values^{1,3}

Human Relations Model (Commitment)

- ✓ H1: behavioral intent & H2: socio-demographic factors (lower age & male gender less likely to evacuate)

Quantitative Results:

- Behavior intent had high motivation to actual evacuation
- Socio-demographic neutrality (except for age and gender)
- Trust is a measure of credibility

Qualitative Themes:

- ...personal/social psychology
- ...motivation for volunteering
- ...social & psychological functions of volunteering

Open Systems Model (Adaptation)

- ⊗ H7: higher message credibility modifies subject norms

Quantitative Results:

- Message credibility has little motivation over evacuation
- Agency obligation to communicate need to leave through credible source & media (e.g. ER, fact-based, etc.)

Qualitative Themes:

- ...perturbed instances
- ...vehicle routing
- ...product demand
- ...delivery point
- ...computation time
- ...disaster relief response operations management

Internal Process Model (Continuity)

- ✓ H6: negative disaster experiences modify personal attitude

Quantitative Results:

- over confident from past false-negatives (NDE)
- Survived previous storms
- believe storms less severe
- Will neighbors leave too?

Qualitative Themes:

- ...social network connectedness
- ...effective governance structure
- ... disaster response effectiveness coordination
- ...institutional matrix

Rational Goal Model (Maximization)

- ⊗ H5: real estate value positively relates to evacuation

Quantitative Results:

- Material economics had little motivation over evacuation
- Survey local behavior intent, personal attitudes, and social norms
- Target-messaging to evacuate
- Force resident evacuation

Qualitative Themes:

- ...pre-planning
- ...disaster services human resource system
- ...need for effective, high-availability, disaster recovery
- ...supply-chain logistics management
- ...emergency disaster response

Recommendations: Values

Human Relations Model (Commitment)

- Heighten individual evacuation commitment
- Increase trust in the message credibility
- Increase trust in condition severity at local social and cultural levels
- Increase awareness of 72-hour self-sufficiency
- If uncommitted or refusing to evacuate, commit to volunteerism during the event

Open Systems Model (Adaptation)

- Maintain agency diligence in evacuation messaging
- Increase messaging reach through social media
- Incent evacuation, beyond fear of loss, to desire to leave (pull vs. push)
- Incent higher levels of education in preparedness planning toward evacuation readiness (e.g. reduced insurance premium with certification, etc.)

Internal Process Model (Continuity)

- Emergency responders deployed early as emergency preparers
- Social network enabled crowdsource within the impact zone as communicating urgency to localized pockets resisting evacuation
- Playbook-based preparedness triggered by predictive analytics
- Experiential trending over multiple events with time may raise new populations of preparedness responders

Rational Goal Model (Maximization)

- Intentional shift from crisis response to crisis aversion
- Emergency response planning adds pre-event 72-hour self-sufficiency requirement that includes evacuation
- Assure educational experiences through simulation under varied event severity
- Leverage concepts such as “neighborhood watch” in crime prevention to neighborhood action in disaster preparedness
- Learn from commercial logistics agents and distributors, how to mobilize workforce amid crisis

Limitations & Discussion

- New York survey was limited by region, flooding disaster, survivors
- Case study of Red Cross is limited as literature research

Discussion for ER & EP personnel @ IDCE:

1. Consider conducting the quantitative survey in (your) coastal cities to learn local, social motivations
2. Inculcate the qualitative themes in crisis response
3. Inculcate the combined values in preparedness

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Author Biographies

Kenneth D. STRANG, Doctorate, MBA, BS, BT, FLMI, CNA, PMP – Dr. Strang is a past and current supporter of IDCE. He serves as a dissertation committee chair for several students. As Business Program Coordinator for the State University of New York, Queensbury, CEO of APPC Research, and Board Director for several non-profit humanitarian organizations, Ken provides active service to the EMS community. He is also Chief Editor/founder of the *International Journal of Risk and Contingency Management* (<http://ijrcm.multinations.org/>), and Associate Editor for six other peer-reviewed journals. Dr. Strang specializes with interdisciplinary applied research, across cultures. He is skilled with triangulating qualitative and quantitative data. He is a globally-respected academic/business researcher with over 130 publications.



Robert J. SYMONDS, MBA/PMP/ITILv3® - DBA candidate (Texas) and adjunct faculty in the business and project management programs at the University of Phoenix. Mr. Symonds published several journal and symposium papers in project and risk management. His doctoral dissertation is focused on competing values framework in crisis response. He has served healthcare operations and humanitarian foundations in localized research. He is associate editor for the *International Journal of Risk and Contingency Management*. As transformational-innovative leader and accomplished professional, Mr. Symonds has extensive experience leading business transformation in global technology organizations across diverse industries. He is highly competent in risk, project, and change management, compliance, and operational governance.

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Abstract

The loss-impact by natural disasters upon life, health, well-being, personal wealth, local and regional economy, municipal infrastructure, and prodromal, socio-semantic, quality-of-life may be reduced by influencing those who are survivors and those who become victims to obey evacuation warnings and prepare for requisite self-sufficiency. A statistically significant, quantitative model of post-positivist ideology is combined with a qualitative, exploratory, retrospective, single case study interpreting competing values that govern its mass care delivery in crisis response. The method extracts data from subject-relevant scholarly literature in competing values governing mass care delivery by emergency responders as well purposively selected surveyed participants who experienced evacuation choices during Hurricane Irene in 2011. Computer assisted qualitative data analysis concluded 28 themes associated to competing values quadrants for an emergency responder agency. Inferential statistics affirmed 4 of 8 hypotheses, the more important being behavior intent, social norm, and personal attitude modified by gender and age. Merging quantitative characteristics in hypotheses with qualitative themes from literature research concludes in competing values between commitment with performance, and continuity with adaptation. The study extrudes 18 recommended, actionable, values, leaving the audience with 3 condensed, relevant, discussion points to potentially influence future survivors and those who have yet to become victims by obeying evacuation warnings and prepare for self-sufficiency.

Keywords: crisis, response, preparedness, survivor, victim, competing values, qualitative, quantitative, survey, literature, research, evacuation

IDCE Market Influence

The study extrudes 18 recommended, actionable, values, leaving the audience with 3 condensed, relevant, discussion points to potentially influence future survivors and those who have yet to become victims by obeying evacuation warnings and prepare for self-sufficiency.

The IDCE market may benefit by influencing:

1. Public policy modification
2. Funding diversion from response to preparedness
3. Reducing loss-impact by increasing the numbers of evacuees and their conversion to preparedness and response self-sufficiency
4. Better incent desired behavior that perpetually improves socio-semantic preparedness, volunteer readiness, responsiveness, cyclical improvement year-over