

# Risk Messaging and Behavior Related to Labor in Supply Chains

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## Flu, Risks, and Videotape: Escalating Fear and Avoidance

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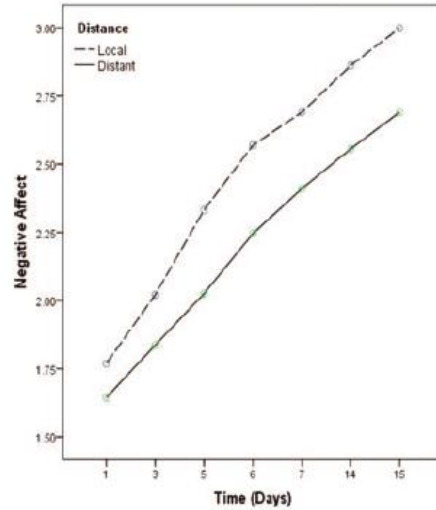
While extensive risk perception research has focused on emotions, cognitions, and behavior at static points in time, less attention has been paid to how these variables might change over time. This study assesses how negative affect, threat beliefs, perceived risk, and intended avoidance behavior change over the course of an escalating biological disaster. A scenario simulation methodology was used that presents respondents with a video simulation of a 15-day series of local news reports to immerse respondents in the developing details of the disaster. Systemic manipulation of the virus's causal origin (terrorist attack, medical lab accident, unknown) and the respondent's proximity to the virus (local vs. opposite coast) allowed us to investigate the dynamics of public response. The unfolding scenario was presented in discrete episodes, allowing responses to be tracked over the episodes. The sample includes 600 respondents equally split by sex and by location, with half in the Washington, DC area, and half in the Los Angeles area. The results showed respondents' reactions to the flu epidemic increased as the disaster escalated. More importantly, there was considerable consistency across respondents' emotional, cognitive, and behavioral responses to the epidemic over the episodes. In addition, the reactions of respondents proximally closer to the epidemic increased more rapidly and with greater intensity than their distant counterparts. Finally, as the flu epidemic escalated, both terrorist and accidental flu releases were perceived as being less risky and were less likely to lead to avoidance behavior compared to the unknown flu release.

**Table II.** Summary of Flu Epidemic Scenario Simulation by Origin, Location, and Time

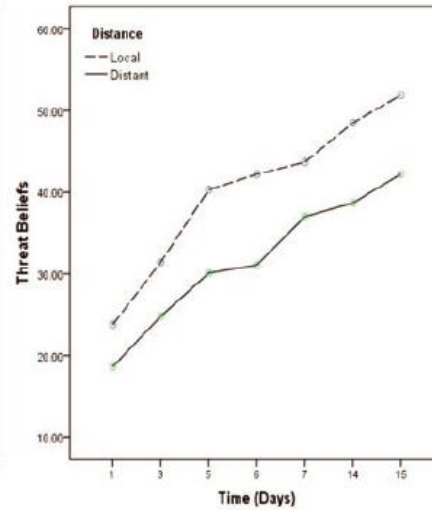
Time	Outbreak Origin		
	Accidental	Terror	Unknown
1	<p>Seven people have contracted a new and apparently severe flu strain; The sick are quarantined at three area hospitals: <b>LA:</b> Cedars Sinai, USC County, and Children's Hospital <b>DC:</b> Washington Adventist, George Washington University Hospital, and Children's National</p>		
3	<p>Two deaths; 250 cases confirmed; additional 500 cases suspected; CDC working on formulating a new vaccine; Unconfirmed reports that outbreak resulted from the accidental exposure of workers at a medical facility</p>	<p>Unconfirmed reports that the outbreak might be the work of a terrorist cell</p>	<p>Officials looking into an array of possibilities regarding the virus' origin</p>
5	<p>150 deaths; State of emergency declared; Most emergency rooms in the area are at or over capacity</p>		
6	<p>Outbreak originated with five researchers at USC Medical Center (<b>LA</b>)/National Institutes of Health (<b>DC</b>) who were inadvertently exposed to the flu strain; CDC reports all of the researchers used public transit after their exposure, which hastened the spread of the virus</p>	<p>Lab where virus was engineered discovered by USC campus (<b>LA</b>)/American University (<b>DC</b>); Officials searching for five Pakistani men believed to have infected themselves &amp; used public transit to spread the virus</p>	<p>Flu strain determined genetically engineered; Still unknown if initial dispersal was intentional or accidental; CDC reports some of the first people infected used public transit, which hastened the spread of the virus</p>
7	<p>Over 500 deaths, 12,000 confirmed cases; Outbreak spreading throughout the state; All schools and nonessential government offices in So. Cal. (<b>LA</b>)/<b>DC</b>, Maryland, and Virginia (<b>DC</b>) closed; Travel moratorium into and out of <b>LA/DC</b> area</p>		
14	<p>USC Medical Center (<b>LA</b>)/NIH (<b>DC</b>) releases video taped apology to American public; 2,000th death; Rumors the National Guard may be called in to help enforce a dusk-till-dawn curfew</p>	<p>Al Qaeda releases tape claiming responsibility for the outbreak</p>	<p>CDC releases public service announcement asking for public's continued cooperation and patience</p>
15	<p>Still no vaccine developed; The ill are encouraged not to go to the hospital; instead, medical vehicles patrolling the streets are providing in-home care; WHO is concerned the flu will spread to other countries, giving rise to a global pandemic</p>	<p>Suspected culprits remain at large; Concern that they may have left the country and the flu will spread to other countries, giving rise to a global pandemic</p>	<p>WHO is concerned the flu will spread to other countries, giving rise to a global pandemic</p>



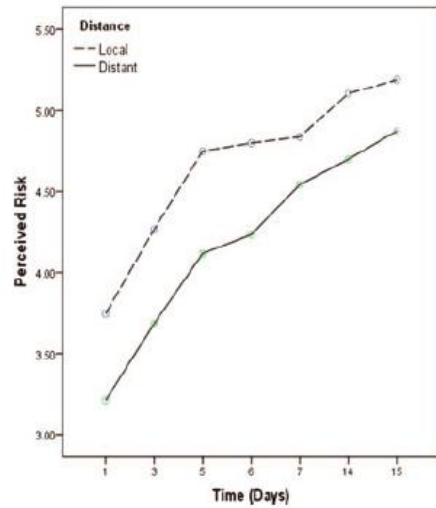
(a) Negative Affect



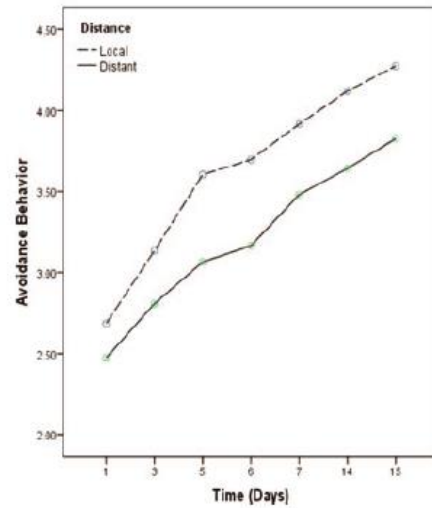
(b) Threat Beliefs



(c) Perceived Risk



(d) Avoidance Behavior





# Message Framing

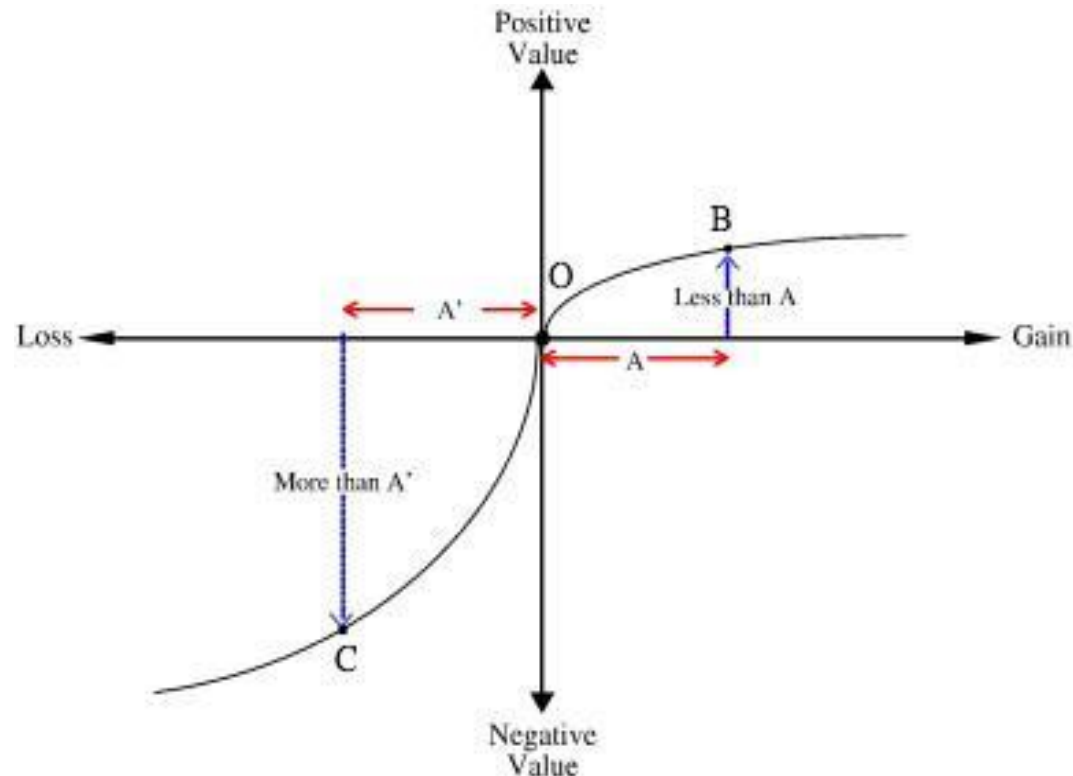
- Loss Frames (Usual default)
  - Facilitates Risk Seeking Behavior
  - Going to Work
- Gain Frames
  - Nudges Risk Averse Behavior
  - Taking Precautions while going to Work

# Value Function From Prospect Theory

Frame determined by the Reference Point

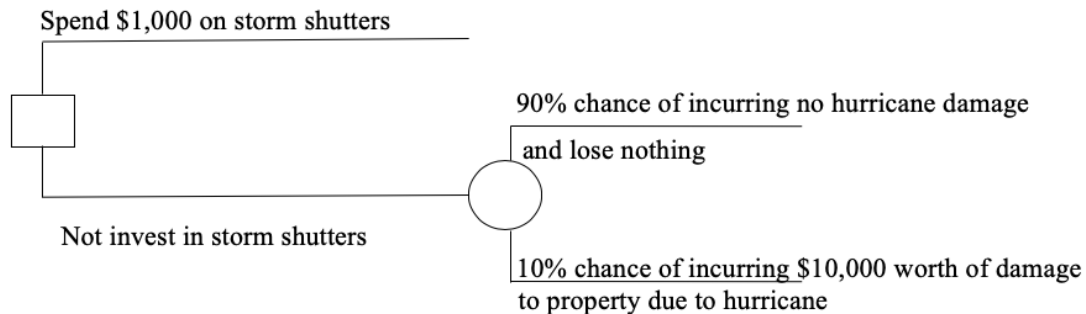
Status Quo, Usual Loss Frame

Shifting Reference Point to the Left Creates a Gain Frame

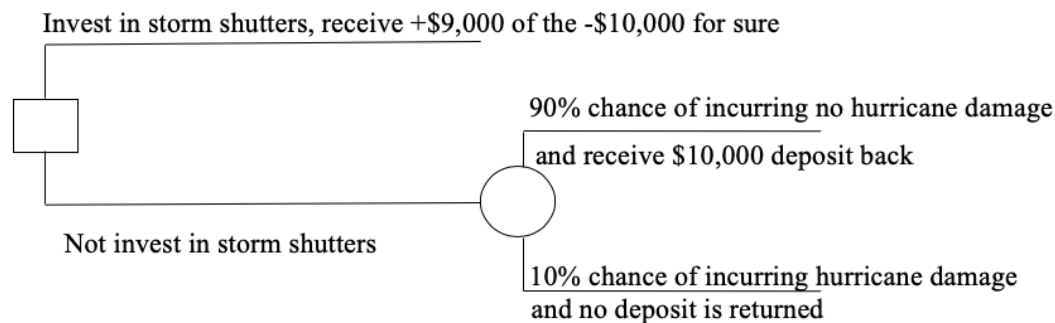


# Loss and Gain Frames for Mitigation from Natural Disaster

Decision Tree for Risk Mitigation\*Loss Frame Condition

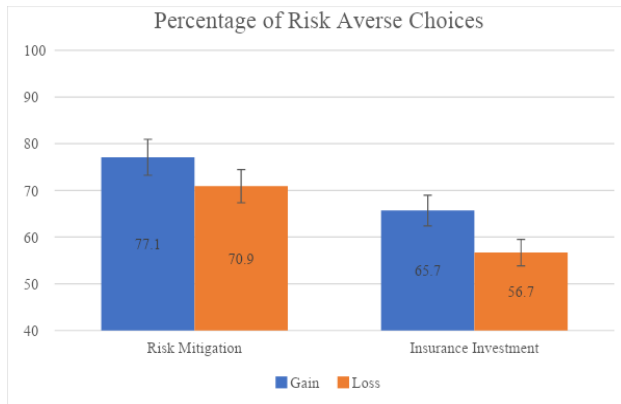


Decision Tree for Risk Mitigation\*Gain Frame Condition

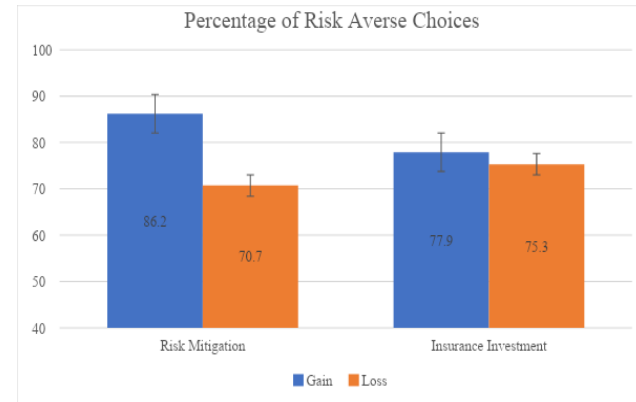


# Risk Averse Mitigation Action by Message Framing for 3 Natural Disasters

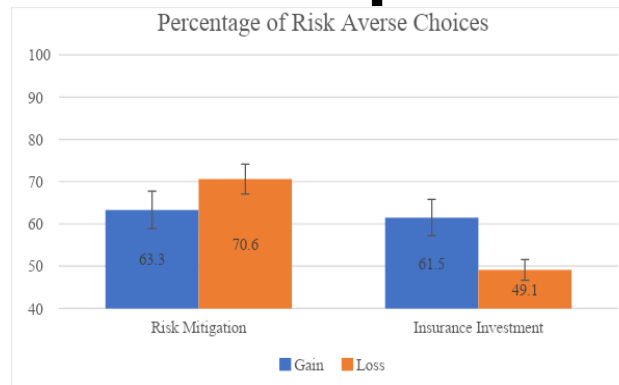
## Hurricane



## Flood



## Earthquake





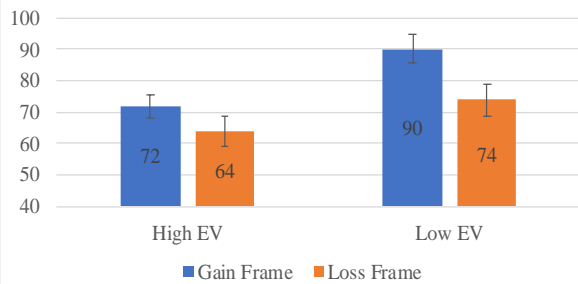
# Risk Averse Mitigation Action by Message Framing for 3 Natural Disasters by Expected Loss/Gain & p(Disaster)

## Hurricane

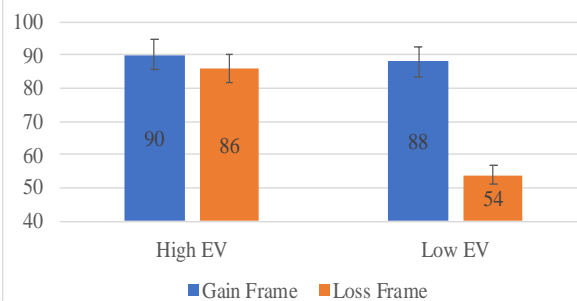
## Flood

## Earthquake

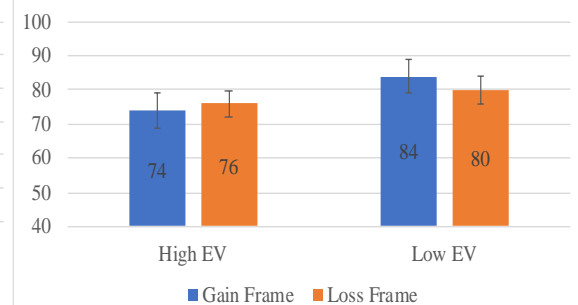
Percentage of Risk Averse Choice



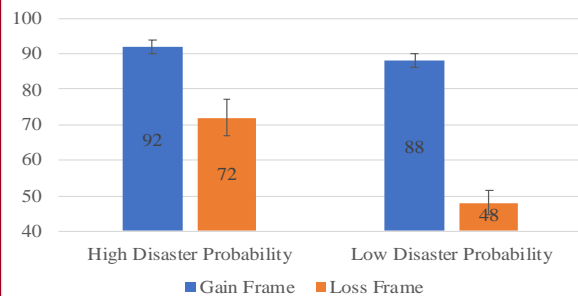
Percentage of Risk Averse Choice



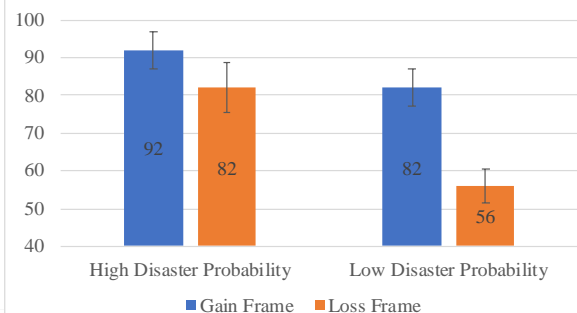
Percentage of Risk Averse Choice



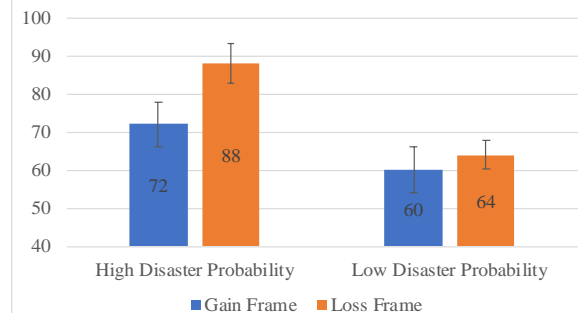
Percentage of Risk Averse Choice



Percentage of Risk Averse Choice



Percentage of Risk Averse Choice



# Risk Message Framing for Supply Chain Workers

- Gain Frame to Promote Use of Personal Risk Averse Protective Measures
- (Usual) Loss Frame to Promote Working