Research Brief for Resource Managers

Acknowledging the presence of decision biases among emergency managers

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The fields of psychology and economics have explored the complexities of human rationality in decision making and have found numerous systematic biases influence our decisions; whether we are university students or experienced emergency managers. These biases are not necessarily negative but instead refer to features of human decision-making that depart from expected "rational" human actions used to predict behavior in economics.

This study specifically surveyed county emergency managers, the individuals who are responsible for mitigating and responding to disaster events, such as catastrophic wildfires or floods. Because these individuals are regarded as experts in their field, they are assumed to be more unbiased and rational in their decisions. However, when the authors of this study looked at six types of decision biases commonly identified among the public in the psychology literature, the managers showed that they too respond to situations with biases. By learning and acknowledging that even experts are subject to decision biases, we can improve emergency management and decision-making processes.

Methods and Respondents
To conduct their study, the researches sent out an email questionnaire with 46 closed-ended questions to about 1,349 managers within their sampling frame. Emails were found using searches of county-based emergency managers throughout the nation. After sending two email reminders about the survey, the researchers received 316 respondents, 231 of which fully completed the survey for a response rate of 18.7%.

Of the managers that responded fully, a majority were 45 years and older, had more than 10 years of work experience, and had experienced a flood within the last 10 years. These demographics were similar to those of previous studies that surveyed emergency managers nationwide.

> ## Management Implications
> - Managers are influenced by biases and framing when making management decisions
> - Highlighting successes of other managers and locations can encourage action
> - Decision alternatives should be created with the collaboration of multiple stakeholders from multiple perspectives
> - Presenting information in multiple forms (e.g. % and ratio, gains and losses) can better inform managers by widening their decision lens

Hypothesis and Results
The researchers hoped to address six well-known theories that could cause bias and affect a manager's decisions. To address these theories, hypothetical scenarios were presented and decision actions were chosen by the managers. The hypothesis and the results are as follows:

1. **Prospect Theory Analysis:**
   Hypothesis: The way a situation is framed matters. If a situation is framed as preventing a potential loss, emergency managers are more sensitive to a loss than if a situation is presented as creating a potential gain.
   Result: Emergency managers seemed sensitive to the framing of effects of equivalent value, and were more likely to act if a situation was framed as creating a potential loss.

2. **Regret Hypothesis**:
   Hypothesis: Emergency managers have less regret about being wrong when a negative outcome is because of a failure to act. Emergency managers have more regret about being wrong when a negative outcome is the result of an action they decided to take.
   Result: Emergency managers dislike errors of omission (situations where they did nothing, and a bad disaster happened) more than errors of commission (situations where they took actions to prepare for a disaster, but no disaster happened).

3. **Attribution Bias**
   Hypothesis: Emergency managers assess or judge the decisions of others differently than their own decisions. This means that a manager might attribute someone's decision to what they perceive as that person's character, with little or no regard to the situational context in which the decision was made. This can lead to biases in group decision making.
   Results: There was a significant difference in responses when they were asked to evaluate an equivalent situation as themselves compared to as another emergency manager.

4. **Numeracy**
   Hypothesis: Emergency managers exhibit different risk preferences depending on the format in which identical information is presented. Getting numerical information in a percent may cause a manager to be more

cautious in their decision making than information presented as a ratio.
Result: Managers deemed damages from a disaster as more acceptable when presented as a percent rather than a fraction or ratio. The form in which numbers are expressed did affect their decisions.

5. **Neighbor Effect:**
   Hypothesis: Emergency managers are influenced by the actions that peers in neighboring jurisdictions take.
   Results: 14% of managers said they would be "very likely" to take action to prepare for a flood in their own jurisdiction if they knew that neighboring managers were not doing so. If they knew that neighboring managers were taking action, 51% of managers said they would take action.

6. **Outcome Bias Hypothesis:**
   Hypothesis: Emergency managers may rate a decision process or maker as better when the outcome was favorable than when it was unfavorable, even if the difference was due to uncontrollable events like weather severity.
   Result: The end outcome of a disaster event greatly influenced a manager's perception about the quality of a decision-making process. If the flood resulted in bad damages, they would rate the preparedness lower than if the flood had the same preparedness but minimal damages.

The results support the notion that managers' decisions are also influenced by the same biases and framing found to influence the general public. The authors emphasized a need to mitigate these effects and incorporate multiple forms of presenting information and group collaboration when making complex decisions under uncertainty. For example, a structured decision process at the organizational level may include the following steps:
1. Divide problem into stages
2. Define alternatives using a facilitator
3. Define how to measure performance
4. Discuss alternatives and face tradeoffs

Finally, it was said that most respondents (90%) agreed that they would benefit from additional training and support for navigating these complex situations.