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AN INTRODUCTION TO PERISHABLE DATA IN HAZARDS AND DISASTER RESEARCH

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This check sheet summarizes published research to provide a brief overview of perishable data and its value in hazard and disaster contexts.

WHAT IS PERISHABLE DATA?

Perishable data refers to highly transient information that can be permanently altered or lost if not properly and promptly gathered (Adams et al., 2023). In the context of hazards and disasters, perishable data covers a broad range of categories such as structural, environmental, and social data. The timeliness of collecting perishable data is vital, as cleanup efforts, natural processes, memory decay, and shifting perspectives can rapidly change the data's quality or availability (Adams et al., 2023).

The terminology used to describe the collection of perishable data can vary across disciplines; social scientists often use the term "quick response" research, while engineers may use "reconnaissance" (Michaels, 2003; Wartman et al., 2020). For example, when sociologists Fothergill and Peek (2015) launched their study of children after Hurricane Katrina, they referred to their efforts as "quick response" data collection. When engineers Rathje and Franke (2016) analyzed three separate case studies on earthquake data collection, they characterized the case studies as applying "geotechnical earthquake reconnaissance" techniques. Despite the different terminology, these concepts represent the common goal of collecting transient hazards and disaster data before it is permanently lost or otherwise altered.

Although the timely collection of data is fundamental to understanding the importance of perishable data, it is not limited to data collected in the immediate aftermath of disasters. It can also include pre-disaster data, such as information highlighting hazardous conditions or the ability to predict, cope with, and recover from such incidents. It also may refer to data collected on near-miss events or information collected over the long-term following a disaster. As Adams et al. (2003) argue, perishable data can be collected across multiple points in time and over varying geographic scales to better understand disaster preparedness, response, or recovery capacities.

PERISHABLE DATA IN DISASTERS

Below are a few examples of published studies that draw on different types of perishable disaster data.

Data Type	What Makes it Perishable?	Research Example
STRUCTURAL (e.g., Building or road damage assessments)	Cleanup efforts and reconstruction activities can rapidly alter or erase this evidence.	Wartman et al. (2020) outlined the potential for perishable data to improve structural simulations of the built environment in natural hazard situations in general to inform decision-making and mitigation practices. Improvements include the reduction of probabilistic uncertainty, generating new possible simulations, and validating existing simulation models to improve accuracy.

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Data Type	What Makes it Perishable?	Research Example
SOCIAL (e.g., Demographic characteristics of disaster-affected populations)	Changing demographics and societal shifts, such as migration, can alter the data.	Sutton et al. (2023) investigated the perception of post-alert earthquake messages through interviews and uncovered its confusing non-informative nature. The authors used these findings to develop recommendations for risk communication and warning message delivery.
ENVIRONMENTAL (e.g., Flood depth and inundation extent)	Flooding is a dynamic event that has water recede and shift in new areas, altering the data.	Qui et al. (2017) used inundation extent data to improve flood modeling and simulations through the creation of an interconnected flood management system that combines climate models with disaster-related data as well as creating more effective 3-D visualizations.

THE VALUE OF PERISHABLE DATA

Perishable data can help yield valuable insights for hazards and disaster researchers. For example, this data can assist engineers in identifying mechanisms behind structural failures in earthquakes or windstorms. It can help environmental scientists to characterize natural and human-induced processes related to coastal land loss. It can also enable the prediction of evacuation and preparedness behaviors within social contexts, which is extremely valuable for social scientists and policymakers (Gorbea Díaz et al., 2023).

Collection of perishable data enables researchers to evaluate preparedness and response efforts and can help in formulating more effective hazard mitigation or recovery plans and policies for future events. For example, Dr. Leslie Irvine's work on pet welfare during and disasters helped lead to the passing of the Pets Evacuation and Transportation Standards (PETS) Act that helps pets stay with their owners in shelters during the evacuation process (Irvine, 2009). Furthermore, use of perishable data can expand the current understanding of hazards and disasters, contributing to future research by providing insights into the rapidly evolving dynamic of hazards and disasters. The collection of perishable data will continue to play a vital role in the evolution of hazards and disaster research, which in turn will help to improve disaster preparedness, response, and recovery.

CONCLUSION

Collecting perishable data is critical in the context of hazards and disasters. Capturing this time-sensitive, transient information can help further our understanding of hazards and disaster impacts, guide improvements in preparedness and response strategies, and aid in shaping hazard mitigation and recovery policies. Although the implications and importance of perishable data are significant, there are various considerations that researchers should be attentive to when collecting this type of data. These include methodological issues, ethical challenges, and difficulties with rapidly sharing perishable data. For more information on these and other considerations related to the collection of perishable data, please consider completing the CONVERGE Collecting and Sharing Perishable Data Training Module.

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