Learning from Hurricane Harvey: Analyzing Contributions from the SSEER Network

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Purpose

The purpose of this research project is to explore the pipeline of Social Science Extreme Events Researchers (SSEER) by studying Hurricane Harvey and comparing the training of emerging researchers. Specifically, this project analyzes the knowledge, skills, and training characteristics of social science researchers. Using Hurricane Harvey as a case study, this project explores the disciplinary training, level of involvement in hazards and disaster (H&D) research, and geographic location of social science researchers using data from the SSEER network.

Introduction and Background

The effects of climate change impact societies and individuals in unequal ways, increasing the need for trained and multifaceted social scientists. However, few analyses focus on the social science researcher workforce and their capabilities (Peek, Champeau et al., 2020). As human-centered challenges like environmental justice and disaster preparedness become more prominent, social science researchers are needed to guide technical and policy recommendations; future researchers may need more and different skills to tackle these challenges. Moreover, it is unclear how many social science researchers are active in the H&D field, particularly regarding hurricanes.

Simultaneously, due to their growing threat, more research on hurricanes is needed. Studies consistently show that millions of people have their lives impacted or destroyed by such extreme events (GRID, 2017). As a singular event, Hurricane Harvey is well positioned to serve as a case study because it became the costliest disaster in United States history. It is also the second-most studied event by (SSEER) members, after Hurricane Katrina.

Location of Hurricane Harvey Researchers

https://converge.colorado.edu/research-networks/sseer/researchers-map
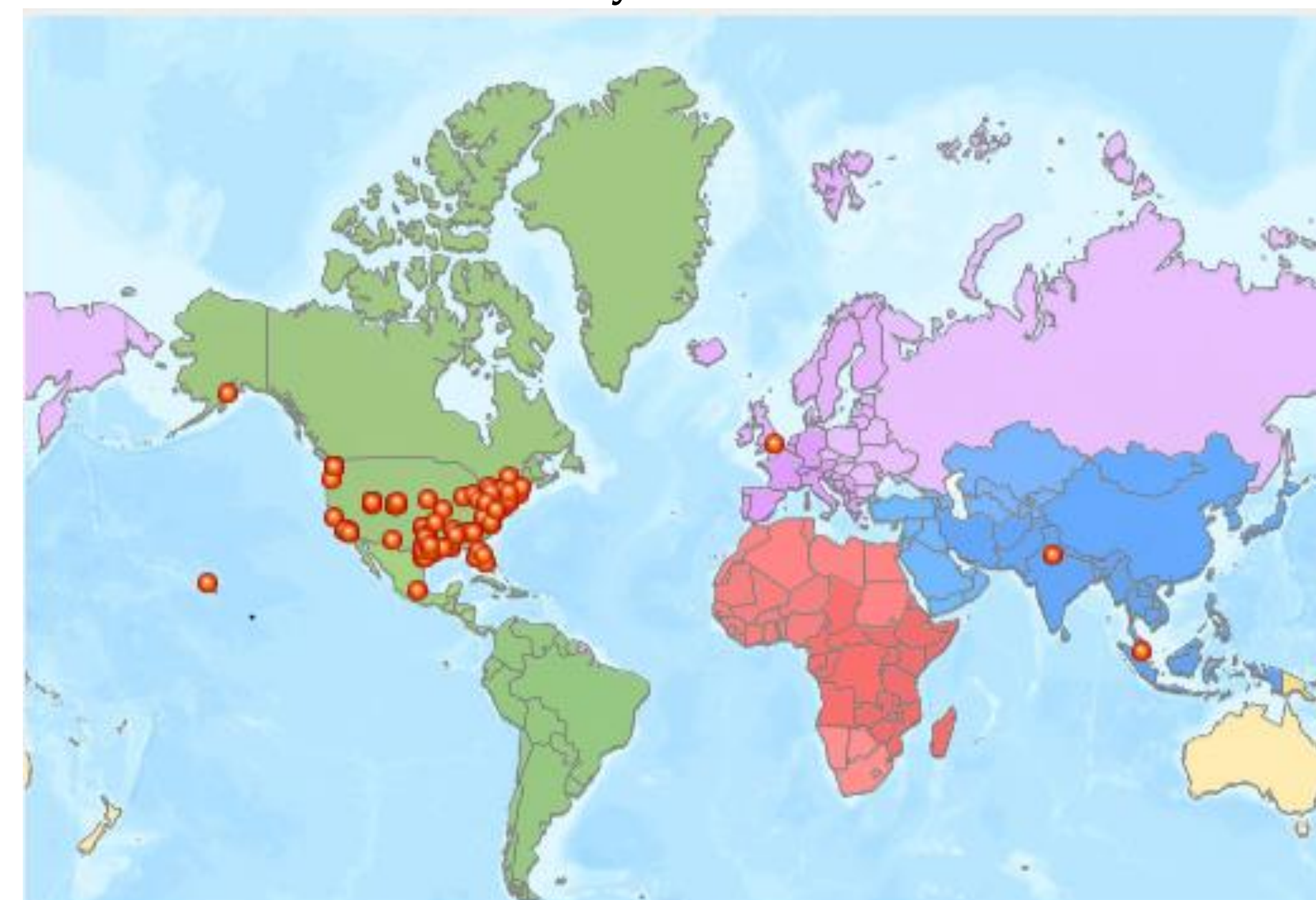
Methodology

The following analyses relied on Microsoft Excel and Stata 17 to answer the questions of this research project.

Data Retrieval

- Data is obtained from the SSEER network, which seeks to be the first census for H&D researchers.
- Derived from a survey that is designed to take less than 10 minutes, these data reveal information such as geographic location, researchers' levels of involvement in H&D studies, and the specific disaster events studied by SSEER members.
- Includes 1,230 members from August 2018 to December 2020

Focus Areas

Geographic Location

The map at bottom left depicts the location of Hurricane Harvey researchers – a set of researchers larger than the region impacted by the event.

Disciplinary Background

Includes decision-making and risk analysis, disaster science, public administration and emergency management, and political science based on Chronbach's alpha tests (alpha = .46)

Emerging Researchers

Focusing on emerging researchers acknowledges the coming challenge of more frequent and stronger disasters. This researcher demographic is expected to study the disasters of the future with comprehensive scholarship.

Hurricane Harvey Researchers

Hurricane Harvey is currently the costliest disaster in United States history. It is also the second-most studied event in the SSEER network.

Count of Disciplinary Identification by Researcher (all members)

Discipline	Count
Political Science	187
Public Administration/Emergency Management	262
Decision-Making and Risk Analysis	268
Disaster Science	396
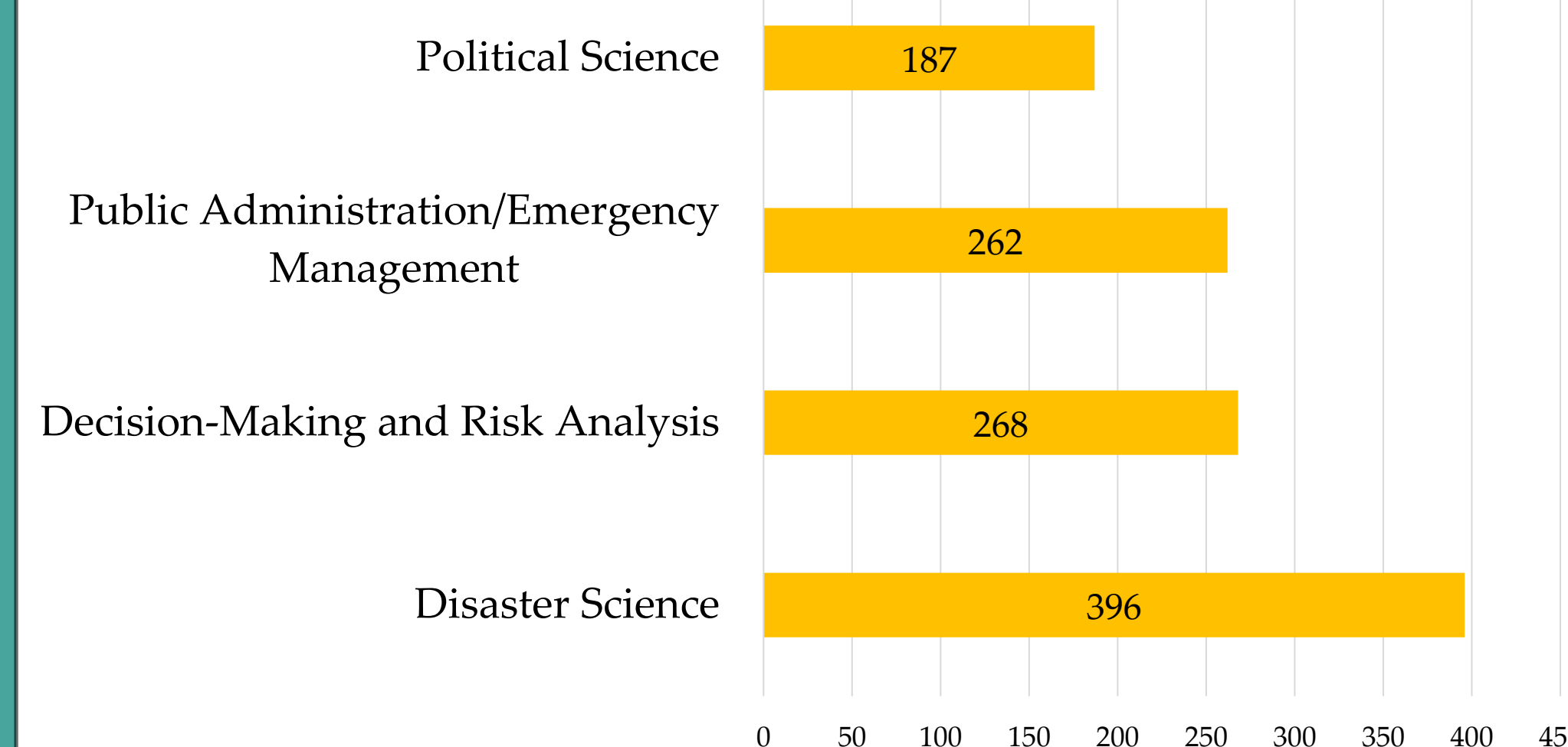
From over 20 discipline areas, these four disciplines share the strongest relationship for all SSEER members.
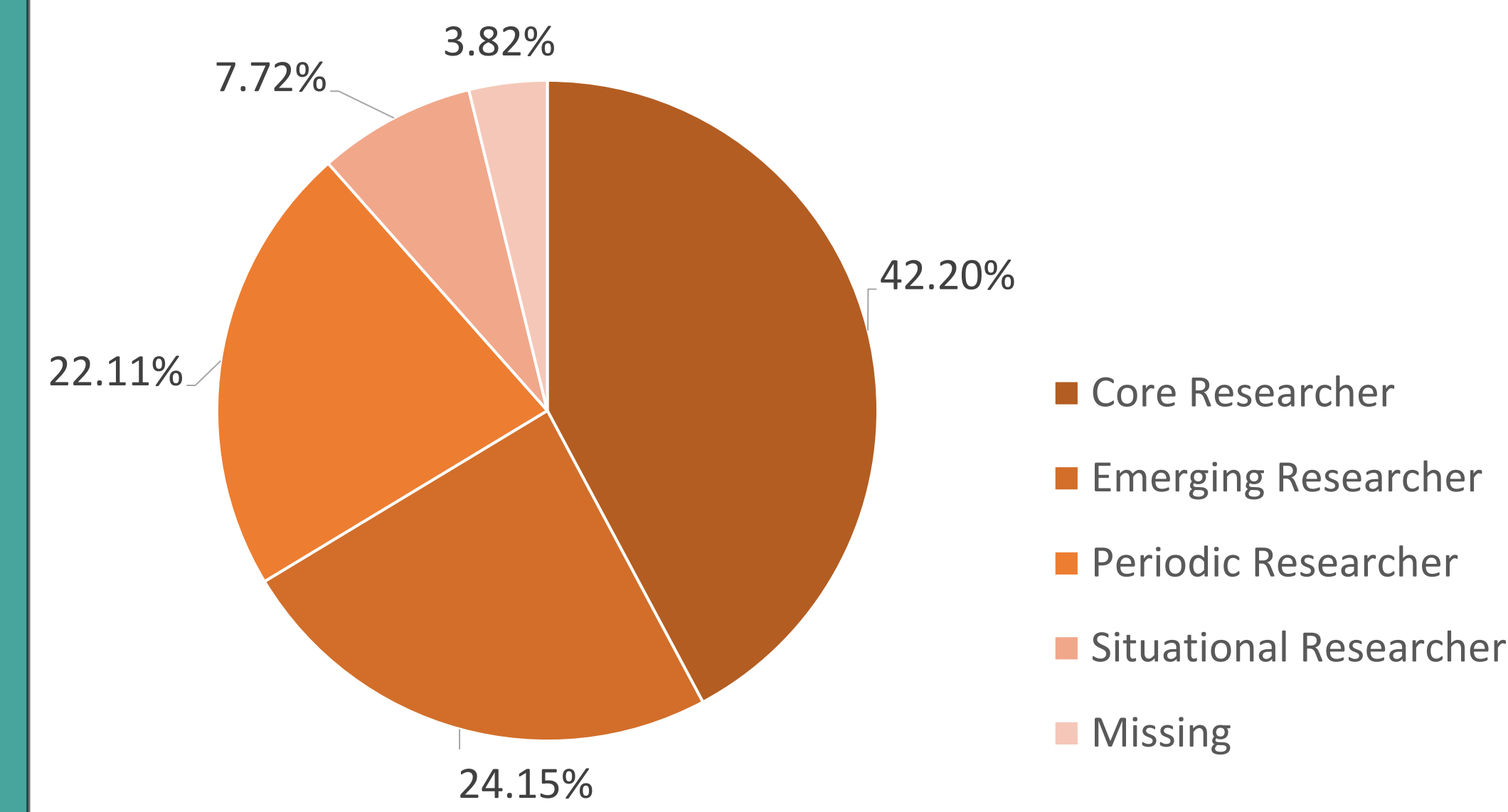
Number of hurricane researchers
565

Number of Hurricane Harvey researchers
149

Self-Reported Level of Researcher Involvement in H&D (N=1,230)

- 42.20% — Core Researcher
- 24.15% — Emerging Researcher
- 22.11% — Periodic Researcher
- 7.72% — Situational Researcher
- 3.82% — Missing

Preliminary χ2 Results

Discipline X Researcher Involvement

Researcher Involvement	Does not identify with disaster disciplines	Identifies with disaster disciplines	Total
Core Researcher	207	312	519
Emerging Researcher	138	159	297
Periodic Researcher	129	143	272
Situational Researcher	58	37	95
Total	532	651	1,183

Pearson's χ2 (3) = 16.2847   Pr = 0.001*

Discipline X Hurricane Researcher

Disaster discipline identification	Has never studied a hurricane	Has studied a hurricane	Total
Does not identify with disaster discipline	283	268	551
Identifies with disaster discipline	382	297	679
Total	665	565	1230

Pearson's χ2 (1) = 2.9383   Pr = 0.086

Hurricane Researcher X Researcher Involvement

Researcher Involvement	Has never studied a hurricane	Has studied a hurricane	Total
Core Researcher	231	288	519
Emerging Researcher	174	123	297
Periodic Researcher	159	113	272
Situational Researcher	63	32	95
Total	627	566	1,183

Pearson's χ2 (3) = 28.7553   Pr = 0.000*

Hurricane Harvey Researcher X Researcher Involvement

Researcher Involvement	Has never studied Hurricane Harvey	Has studied Hurricane Harvey	Total
Core Researcher	439	80	519
Emerging Researcher	264	33	297
Periodic Researcher	247	25	272
Situational Researcher	86	9	95
Total	1,036	147	1,183

Pearson's χ2 (3) = 8.1072   Pr = 0.044*

Discussion

As depicted in the map, large events like Hurricane Harvey can generate global research interest. However, the vast majority of hurricane researchers are located in the United States, as evidenced.

There is a statistically significant relationship between researcher involvement and identification with the selected disaster disciplines; involvement in the H&D field varies for researchers with these disciplinary backgrounds.

There may be a connection between studying hurricanes and identifying with the selected disciplines.

There is a distinct relationship between studying hurricanes and researcher involvement.

Finally, there is a significant relationship between studying Harvey and researcher involvement. Those who were core and emerging researchers were more likely to study Harvey, signifying the importance of the event to these groups.

Future Directions

In the future, I would like to continue studying the level of researcher involvement and how it relates to policy recommendations and other academic and applied work.

References

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