Improving Disaster Information and Communication Technology through Co-Design and Tabletop Exercises

Puerto Rico

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Call 3 and Continuation Call: Public Health Disaster Research Award Webinar Public Health Disaster Research Award Program August 3, 2023



Original Research Overview



Original Research Overview



Part 1: Cultural Probes - Explore & Understand

To collaborate with residents, community-based organizations (CBOs), and humanitarian aid agencies to co-design the process of **crowdsourcing using the method of cultural probe**, in response to **constraints from the pandemic** as well as reoccurring issues due to the **physical distances for remote or underserved communities**.



Puerto Rico

Loíza

Ponce

Lajas

Timeline

February - August, 2021



Continuation Award Project Overview



Part 2: Tabletop Exercises – Build, Test, & Iterate

1) Software technology: Conduct research and user testing to improve the software technology design to ensure that re+connect is reliable, user-friendly, and accessible

2) Social infrastructure—Increase understanding of how stakeholders interact during disaster relief resource allocation and distribution so re+connect can **foster more inclusive collaboration**; and

3) Data intelligence—Explore how stakeholders use data in disaster management to make sure that re+connect leads to equitable and effective resource allocation and distribution.

Community Partners



Roles & Responsibilities

 Participate in co-design sessions
 Complete IRB/administrative requirements
 Recruit tabletop exercise participants (2 community leaders, 5 residents, 2 municipal representatives)
 Secure and prepare venue
 Logistics support

Project Activities



1. Project Setup and Planning

February 1 - March 8: The research team collaborated with CBOs to align research goals, agenda, and logistics

2. Plan for Co-Design

March 8 - 27: The research team integrated Homeland Security Exercise and Evaluation Program principles and design research to prepare for co-design sessions with CBOs

3. Co-Design and Recruitment

March 27 - April 19: The research team and CBO leaders conducted three co-design workshops to develop and **refine the different aspects of the tabletop exercises**. CBO leaders also **recruited resident and municipal representative participants** based on co-created standards.





Co-Design Materials:

- 3X presentations (discussion & activities guide) Exercise material iterations

Project Activities



4. Tabletop Exercises

May 3 - 5: The research team conducted one tabletop exercise in each of the three communities. Modifications of the workshop materials were made based on feedback and lessons learned from completed workshops

5. Synthesis and Writeups

May 5 - July 14: The research team reviewed, annotated, and synthesized notes and transcripts from the workshops and prepared a written report.

6. Disseminate Results

August: The research team prepared a **presentation to share findings and lessons** with peers and workshop participants.





Objetivos que esperamos puedan realizar hoy

Las agencias municipales de manejo de desastres, los grupos comunitarios y los residentes pueden usar las herramientas de re+connect para trabajar colectivamente en:



Suposiciones de nuestro ejercicio

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oplica

Respuesta y Recuperación

con los atributos definidos en sus tarjetas de perfil.

1.

Es la lera semana de Septiembre, un huracán categoría cinco tocó tierra hace dos semanas, trajo fuertes lluvias que provocaron el desbordamiento del río y deslizamientos de tierra, algunos puentes colapsaron, dejando las carreteras con difícil acceso para algunas comunidades e individuos.

Se compartieron nuevas actualizaciones sobre los impactos en las personas y el municipio también recibió algunos suministros para desastres. Es el momento de asignar estos recursos a las comunidades que más los necesitan.



Exercise Materials:

Intro presentation

- Exercise module 1, 2 (scenario + discussion guide)
- Data & prototype for exercise
- Participant Profiles
- **Evaluation** guide
- Participant Debrief Survey form

Parte 1 - Identificar poblaciones prioritarias por tipo de recurso

1. ¿Qué características de	ebe considerarse para asignar generador	es?			
Generadores Parte 1 - Ide	nco Micrispianis contrion menalement	tivalidación de essatarsa comunidade			
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- Data & prototype for exercise

Role profiles

- Evaluation guide
- Participant Debrief Survey form

No	(Optional)									
Da	40	Part 2. Rate the potentials of re+connect								
Your role in this exercise (Circle what apply)			This tobletop exercise with participation from user groups like you is ortical for us to develop on accessible, reliable, on user-friendly platform.							
1-1	Municipal Representative 2-Community Leader	Based on your experience with the prototype (information tables and charts as well as the process), how likely do you								
a	rt 1. Rate your experience		Circle three of the aspects that you consider to be mos Provide your ratings for the following aspects.	t important.		e rosonning i	APACCE.			
*	Assessment Factors	-	Assessment Factors	Strongly agree	Agree	Neither Agree or Disogree	Disagree	Strongly Disagree		
1	The exercise was well structured and organized	1	Increase residents' awareness of community disaster	5	4	3	2	1		
2	The facilitator(s) was knowledgeable about the material, kept the exercise on target, and was sensitive to group dynamics	2	Increase in positive attitudes toward engaging in disaster planning and risk reduction	6	4	3	2	1		
3	I felt supported to share and discuss my ideas openly in	3	Increase in interactions with other community members	5	- 4	3	2	1		
4	I felt supported to share and discuss my ideas openly in the large discussion group	4	increase in civic engagement activities (attending meetings, contact with decision-makers, voting)	5	4	3	2	1		
5	I felt encouraged to participate in the decision-making	5	Increase in levels of trust in neighbors and the local community	5	4	3	2	1		
6	Process I have learned new things about disaster management	6	Improve trust for their communities and government/agencies	5	-4	3	2	1.		
7	from other members in my group The ideas I proposed were incorporated into the	7	Improve access to disaster relief resources and services in an equitable and effective manner	5	4	3	2	1		
	decision-making process	8	Bridge the gap for residents with special needs	5	4	3	2	1		
8	The ideas I proposed were incorporated into the final response and results	9	Reduce time between event onset and service/resource delivery	5	- 4	3	2	ΞĒ.		
		10	Improve access to and participation in decision-making process	5	- 04	3	2	1		
_		Arr	y additional feedback that you would like to share with us?							

Exercise Materials:

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Tabletop Session Tasks Completed:

25 participants across **3** three-hour sessions in **3** communities

 set priority populations (and the intersections of different vulnerability factors) for different resources;

2) how allocation decisions are made at the municipal level;
3) how communities assign roles and tasks among resident community ambassadors;
4) how communities allocate relief resources to households/individuals.



Results from the Evaluation of the Tabletop Exercises (N = 25)

Assessment Statement	Average Level of Agreement
The exercise was well-structured and organized	4.84
The facilitator(s) was knowledgeable about the material, kept the exercise on target, and was sensitive to group dynamics	4.88
I felt supported to share and discuss my ideas openly in the small discussion group	4.94
I felt supported to share and discuss my ideas openly in the large discussion group	4.96
I felt encouraged to participate in the decision-making process	4.92
I have learned new things about disaster management from other members of my group	4.88
The ideas I proposed were incorporated into the decision-making process	4.80
The ideas I proposed were incorporated into the final response and results	4.88

(Strongly agree = 5; Agree = 4; Neither Agree or Disagree = 3; Disagree = 2; Strongly Disagree = 1)



Level of Agreement with re+connect's Potential for Residents

Assessment Statement	Average Level of Agreement		
Increase residents' awareness of community disaster management needs and measures	4.91		
Increase in positive attitudes toward engaging in disaster planning and risk reduction	4.95		
Increase in interactions with other community members	4.94		
Increase in civic engagement activities (attending meetings, contact with decision-makers, voting)	4.95		
Increase in levels of trust in neighbors and the local community	4.89		
Improve trust for their communities and government/agencies	4.90		
Improve access to disaster relief resources and services in an equitable and effective manner	4.95		
Bridge the gap for residents with special needs	4.82		
Reduce time between event onset and service/resource delivery	4.83		
Improve residents' access to and participation in the decision-making process	4.89		

(Strongly agree = 5; Agree = 4; Neither Agree or Disagree = 3; Disagree = 2; Strongly Disagree = 1)



Level of Agreement with re+connect's Potential for Disaster Management Agencies and Community Groups

Assessment Statement	Average Level of Agreement
Improved understanding of community needs	5.00
Easier to connect and coordinate with other organizations	4.90
Easier to connect and coordinate with residents	4.94
Increased interactions with other organizations	4.88
Greater trust with other organizations	4.82
Greater trust with residents	4.83
Improved disaster management planning and preparedness with access to community information and decision-making support	4.95
More inclusive and equitable decision-making process	5.00
Increased access to funding/resources for disaster management activities (preparation, recovery, etc.)	4.95
More equitable and effective resource allocation and distribution	4.95

(Strongly agree = 5; Agree = 4; Neither Agree or Disagree = 3; Disagree = 2; Strongly Disagree = 1)







workshop notes and transcripts

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insights



Insights Snapshot

1) Different data users need **different levels of information granularity**, especially for some particular population groups such as children, elderly, and the bedridden

2) Different communities and stakeholder groups **make decisions based on on a complex combination** of factors and processes

3) There are current **information**, **communication**, **and procedural gaps** between communities and municipalities in how they prioritize and allocate resources

Lessons Learned & Reflections



What Worked:

1) Close collaboration with community partners in designing all key aspects of the exercise

2) Pilot testing and agile iterative development process to

improve key aspects of the exercise for future workshops

3) Long-term collaboration with our community partners to make sure that we are building something that they want and to ensure mutual trust in the process

Challenges & Lessons:

1) First time that some of the team members designed and conducted a tabletop exercise

2) Translate our digital designs into the analog form that preserves the content and most functionalities

3) Adapt quickly to logistics challenges and improve exercise materials

Acknowledgements

Reverenda Ana Rosa Mendez, REDES Luis Daniel Oliveras, REDES Israel Roman, Surcando La Historia Jomarys Maldonado, Ponce HNS Residents and municipal representatives from Ponce, Loiza, and Lajas



The Public Health Disaster Research Award Program is based on work supported by the National Science Foundation (NSF Award #1635593) through supplemental funding from the Centers for Disease Control and Prevention. Any opinions, findings, conclusions, or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of NSF, CDC, or the Natural Hazards Center.





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