

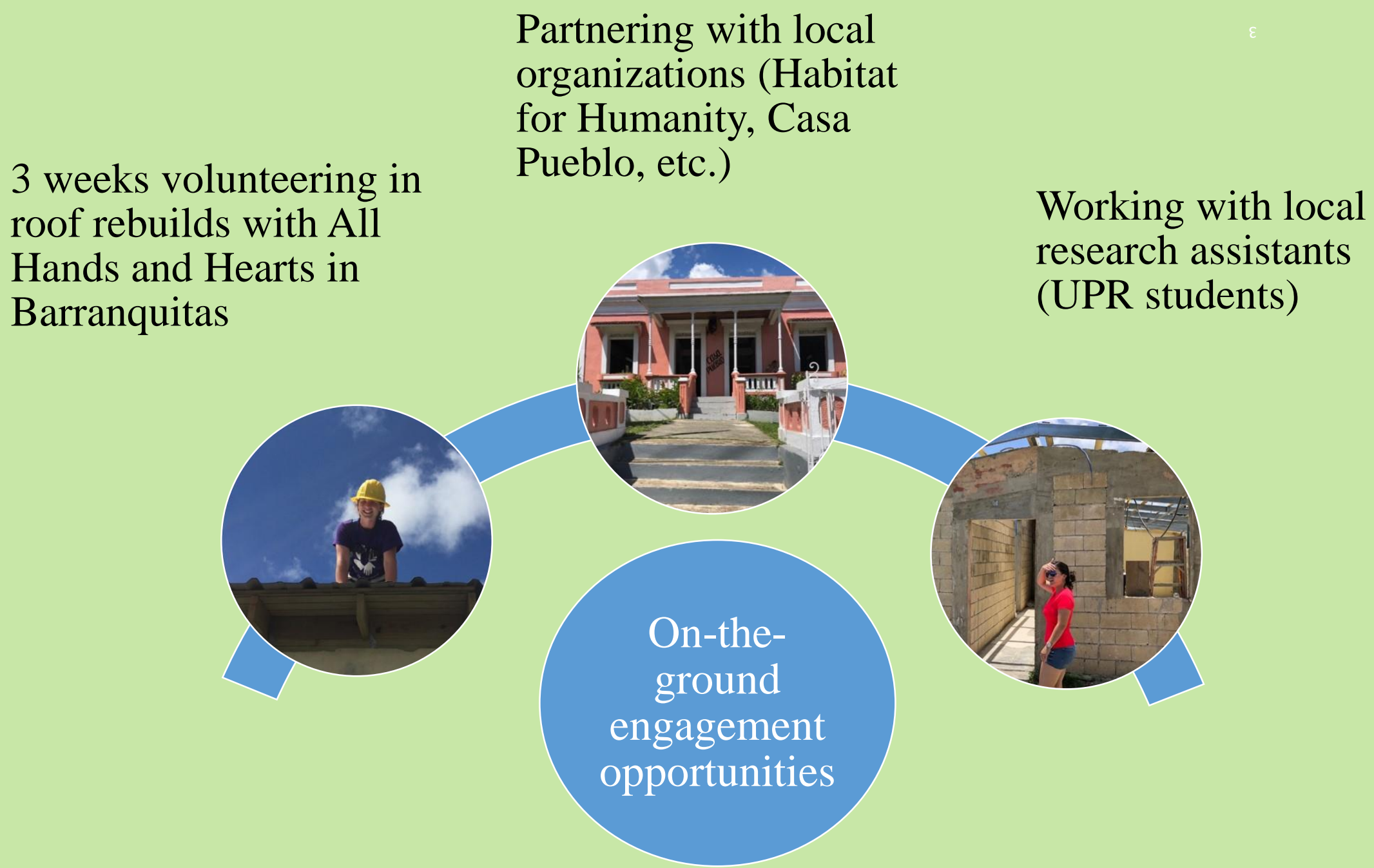
PROJECT CONTEXT

I am currently 2 years through a 3 year research program, using qualitative and quantitative methods, aiming to understand multiple facets of informal housing reconstruction in Puerto Rico after Hurricane Maria. This program has included multiple opportunities for engagement and service within the communities, detailed in the figure below

Recovery obstacles encountered:

- Over 50% of homes on the Island can be categorized as informal, which has significantly affected access to recovery resources, and therefore there is a large volume of reconstruction occurring outside of regulation
- To progress towards a holistic understanding of disaster recovery actions, it is important to understand systematic issues that are encouraging informal housing reconstruction, what populations are engaging in this behavior, and the methods in which they are able to execute it

Study Context



CENTRAL CONCEPT: Informal Housing Reconstruction

Definition: Reconstruction actions that do not include:

- Architect or engineer
- Construction permits
- Building codes
- Proof of land tenure

Definition according to the government of Puerto Rico

Key Contributions:

Theoretical –

- Contextual additions to disaster recovery literature considering the Puerto Rico context
- Wider implications for disaster recovery oversight, including social capital, socioeconomic vulnerabilities, and policy

Practical –

- disaster recovery process updates to best take advantage of existing social capital for improved access to reconstruction
- Inform policy to improve accessibility of reconstruction for the most vulnerable

Results:

- Female respondents were less likely to report the household receiving sufficient money from FEMA
- Higher age correlates with lower levels of education
- Lower education and lower income correlate with the household less likely to report having home insurance
- Not having home insurance correlates with being less likely to be able to prove ownership
- Fewer employed adults, and no insurance, correlates with higher household informal reconstruction

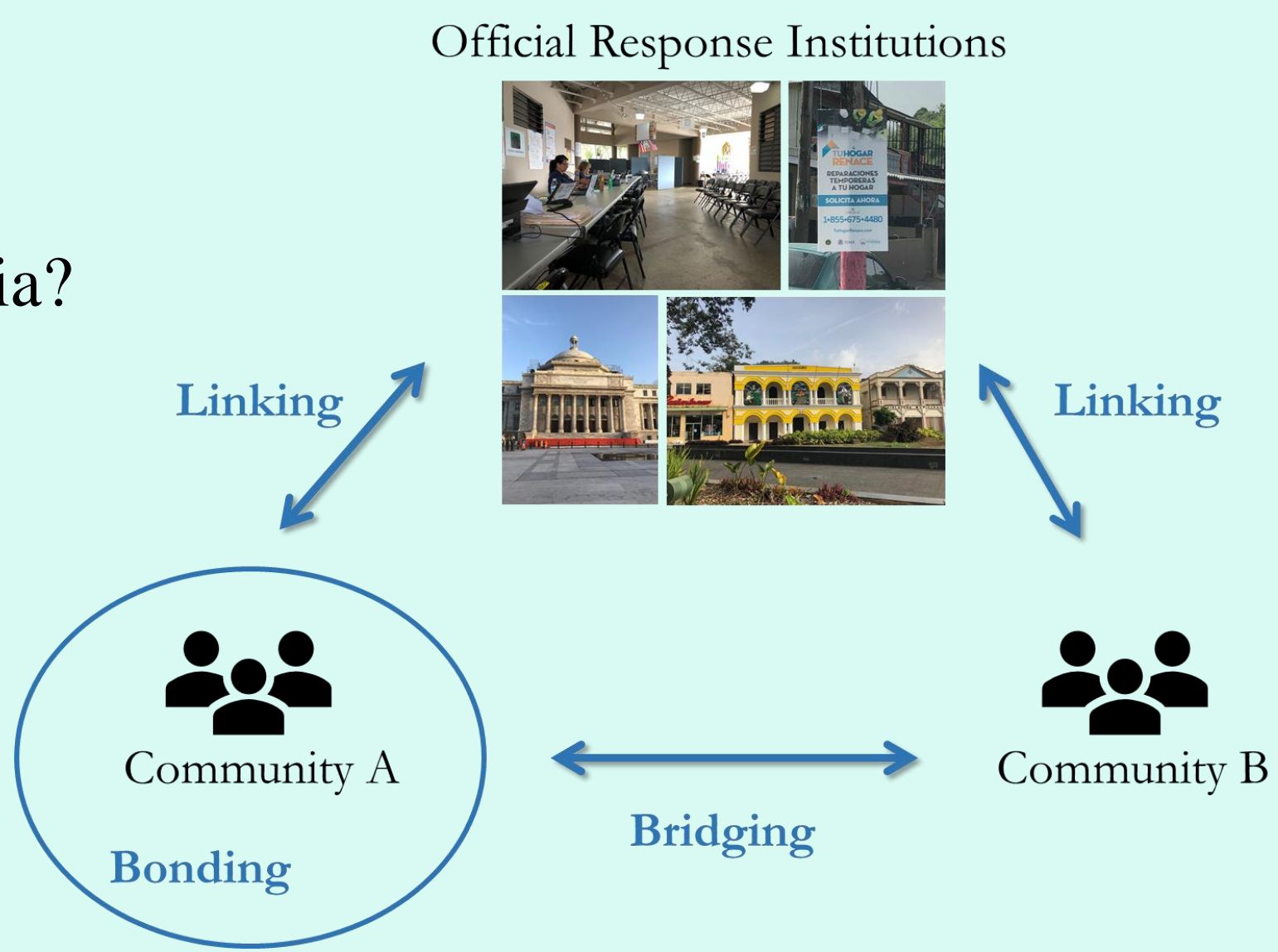


STUDY 1: SOCIAL CAPITAL

Research Question: What forms of social capital are most salient in supporting informal housing reconstruction by households in Puerto Rico after Hurricane Maria?

Theory: Social Capital

- Social ties to others, with elements of coordination and social trust
- Has been studied extensively in the disaster recovery context
- Previous literature shows social capital has an important effect on housing recovery in multiple global contexts
- Conceptualized in a variety of forms, this research uses the framework of bonding, bridging, and linking social capital (Aldrich, 2012)



Methods:

Data collection:

- Community interviews (N=31)
- Door to door household surveys (N=305)

Data analysis:

- Qualitative coding using NVivo software
- Multiple linear regression

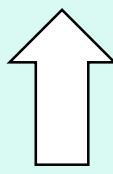
References:

Aldrich, D. (2012). *Building resilience: Social capital in post-disaster recovery*. Chicago: The University of Chicago Press.

Results:



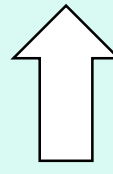
Bonding



(insignificant at $p > 0.1$)



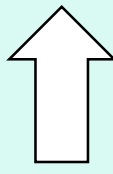
Bridging



(significant at $p < 0.005$)



Linking



(insignificant at $p > 0.1$)



STUDY 2: SOCIOECONOMIC VULNERABILITIES

Research Question: How are socioeconomic vulnerabilities associated with progress in reconstruction in an informal housing context?

Theory: Socioeconomic Vulnerabilities in Disaster Recovery

- Previous literature shows that populations with higher socioeconomic vulnerabilities are often more prone to disaster and have a more difficult time in the recovery process (Tierney, 2014)
- These vulnerabilities often take many forms, including age, gender, disability and chronic illness, income level, employment status, and education level (Sorg et al, 2018)

Methods:

Data collection:

Door to door household surveys (N=305)

Data Analysis:

Descriptive statistics and Pearson's correlations between vulnerability indicators and reconstruction activity variables

Table 1. Breakdown of survey respondents by municipality

Municipality	Number of survey respondents
Loíza	163
Yabucoa	142
Total	305

References:

Sorg, L., Medina, N., Feldmeyer, D., Sanchez, A., Vojinovic, Z., Birkmann, J., & Marchese, A. (2018). Capturing the multifaceted phenomena of socioeconomic vulnerability. *Natural Hazards*, 92(1), 257–282. doi:10.1007/s11069-018-3207-1
Tierney, K. (2014). *The Social Roots of Risk: Producing Disasters, Promoting Resilience*. Stanford, California: Stanford University Press.



STUDY 3: INSTITUTIONAL BARRIERS TO RECONSTRUCTION

Research Question: In what ways do institutions create a barrier for rural homeowners in Puerto Rico attempting to reconstruct after Hurricane Maria?

Theory: Institutional Barriers

- Institutions are often the gatekeepers for recovery policy, funds, and logistical coordination
- In times of crisis, there is often miscommunication, inaccessible policy, and neglected communities (Ingram et al, 2006)
- This can lead specific populations to be left out of policy, forcing or encouraging action that is outside of regulation (Lizarralde et al, 2017)

Table 2. Stakeholder interviews areas of expertise

Interviewee profession/role	Quantity
Engineer/contractor	7
Architect	4
Government employee	4
NGO director	4
NGO employee	4
Community/urban planner	2
Lawyer	1
Think tank employee	1
Engineering professor	1
Housing appraiser	1
Total	29

Results:

Data analysis of Phase 1 is in progress
Preliminary results show major themes of:

- funding
- language in policy and regulation
- (mis)communication
- cultural competency
- enforcement of policy



Acknowledgments:

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