Analysis and Characterization of Community Projects for Resilience

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Background/Objectives. Practitioners and decision makers are changing their approaches to applied climate science: instead of working to avert climate change scenarios, researchers are increasingly opting to adapt communities in situ to improve their *resilience*. Resilience is inherently affected by cross-sector challenges, and so definitions and applications of resilience should be underpinned by a similarly cross-sector understanding of resilience. We intended to unify formal resilience theory with community practice, while also addressing whether the research-defined resilience criteria were in alignment with stated community priorities. We developed our resilience framework and associated key words with the expectation that there would be overlap and measurable similarity between the set of words used to describe resilience and the words used by communities to describe their own priorities. We plan to use the outcomes of this research in tandem with geospatial data and free mapping software to develop an applied resilience assessment tool for general use across the continental United States.

Approach/Activities. We conducted a review and synthesis of cross-sector resilience frameworks. From this we developed our own set of measurable indicators of community resilience. We extended this synthesis and developed key search terms that screened text for the relative presence or absence of these indicators across a community project database. During this process we also crosswalked resilience indicators and their corresponding search terms to the United Nations Sustainable Development Goals (SDGs) to enhance the applied connection between resilience and sustainability. For the second component of our methodology, we conducted a 3-part analysis of community-led case studies made available through a memorandum of understanding (MOU) with the Educational Partnership for Innovation in Communities Network (EPIC-N) database of community projects. We then a) analyzed the project abstract text, using the resilience search terms to characterize and thematically profile different community priorities according to our synthesized resilience framework; b) analyzed the project abstract text using natural language processing methods to tease out the organic language sans any framework imposed upon it to establish a set of "control" words; and c) compared the "control" lexicon to the "experimental" resilience lexicon using Jaccard's similarity index.

Results/Lessons Learned. We found very little overlap in the language used by researchers to describe resilience priorities and the language used by communities to describe their own priorities and needs. However we found broad categorical overlap in the kinds of topics both groups prioritized. This suggests that researchers fail to utilize specific language appropriate to community priorities, but fundamentally share broad categorical overlap with communities with regards to topical priorities. We encourage researchers and practitioners to bridge the gap by augmenting resilience-screening indicators with machine-learning algorithms to help expand experimental resilience lexicons, ground-truth text-based and remotely sensed indicators with focus groups and interviews with community members. Our research sets the stage for the future development of a mapping application that marries text-mined data and remotely sensed data, real community case studies, and community resilience theory in a medium accessible to a wide audience of community stakeholders.