The Role of Technology in Community Resilience and Disaster Preparedness
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This summer, I collaborated within two teams of scholars and professionals on distinct yet related projects. While working with my mentor Eileen Sylvan Johnson from Bowdoin's Environmental Studies and Digital and Computational Studies departments, I focused on community resiliency and the role of technology in preparing for and managing unexpected events. I utilized technology to analyze and support emergency responses for various sectors across the state of Maine and came away with interesting findings from each project.

The first of the two projects I participated in focused on municipal responses to the COVID-19 pandemic across the state of Maine. For this research, I worked within a team of professors and students from Bowdoin, University of Maine Orono, and University of Southern Maine. This multi-institutional and interdisciplinary team allowed for a unique analysis of municipal responses from a variety of perspectives. The other undergrad students and I spent most of the summer gathering data from town websites, Facebook pages, newsletters, and other digital resources. We data scraped from fifty coastal towns and fifty inland towns, carefully noting the categories covered and resources provided by all the municipalities. We used a qualitative data analysis computer software called NVivo to capture all of this data, and the next portion of the research will focus on coding that data for further insight into the information provided by towns. Aside from collecting data, I also conducted a social network analysis for the towns in our study. This social network analysis included all organizations, companies, and agencies included on town websites, and the final visualization revealed a complex, intertwined network of institutions that towns have relied on for providing information to residents about the pandemic. Initial findings from this work reveal that coastal towns seem to have a more robust pandemic response overall than inland towns. As this research project continues, I'm looking forward to seeing what factors distinguish towns and allow them to demonstrate higher community resiliency than others.

The second project, which I am still participating in, focuses on designing and executing a scenario planning exercise for stakeholders from various sectors in southern midcoast Maine. By bringing together participants from the municipal, social services, conservation, and emergency management sectors, this exercise aims to improve disaster response and preparedness through increased collaboration and attention to vulnerable populations. To achieve this goal, the team has created a tabletop exercise, which is a discussion-based event centered around a theoretical emergency situation. This particular tabletop exercise deals with a major storm event. For this project, I have created a variety of maps using an online mapping software called ArcGIS Pro. I compiled these maps into story maps, which are accessible maps formatted in a presentation-like style. These story maps display a variety of resources utilized for project development (social vulnerability index, FEMA flood maps, sea level rise modeling, and others) as well as visuals that guide participants through the event, such as a map that shows which roads will flood during the storm scenario. These visuals will provide important information to tabletop participants and will hopefully aid the development and analysis of community resilience to storm events. The outputs of this project will be shared with state level policy makers and can be modified and adopted for tabletop exercises in other coastal towns. Additionally, this project acts as the basis of a role-playing exercise for Bowdoin students on coastal storm impacts and responses.

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