Florida State University

iSmart for Disasters: Exploring Smart and Connected Disaster Planning for Rural and Small Libraries

STATEMENT OF NATIONAL NEED. In this ***NLG Research in Service to Practice*** study, the FSU School of Information and College of Engineering will partner with the State Library of Florida, the Panhandle Library Area Network (PLAN), and county emergency management officers to ***explore*** existing disaster preparedness, response, and recovery (DPRR) plans in the state; ***integrate*** advanced geographic information system (GIS) mapping analyses to ***develop*** smart and connected data-informed disaster plans for recently devastated public libraries of Florida's rural Panhandle; and ***distill*** evidence-based recommendations and models for small and rural public libraries throughout Florida and the nation. This research study responds to findings from our current IMLS-funded study (RE-96-18-0127) of Florida Panhandle public librarians affected by Hurricane Michael's October 2018 strike in which we found few formal DPRRs in place among impacted rural libraries, consistent with IMLS' 2019 Heritage Health Information Survey[1] which indicated that only 1/4 of US small and rural libraries have a disaster plan. In Florida, #1 location for U.S. mainland hurricane hits, many public librarians are contractually obligated to be first responders and serve their communities during natural disasters, though few have current contextual policies and procedures to guide this life-saving work. Even when a public library does have a disaster response policy, rarely is this policy current, complete, based on the relationship between communities and built environment, and evaluated for effectiveness. The goal of this ***exploratory*** study is to develop a collaborative, community-centric, multi-disciplinary smart and connected DPRR model informed by librarians and Geographical Information Systems (GIS) to ***build and strengthen small and rural libraries' capacity*** to prepare library personnel to be ***community catalysts*** that meet community needs and safeguard library resources in disasters.

PROJECT DESIGN. We will use a mixed inductive and deductive methods design to understand the needs of small and rural libraries and their communities. Deductively, we will explore current disaster plans in the state, meet with the librarian directors and emergency personnel who implement them, and identify essential plan elements for small and rural libraries. Inductively, we will use GIS to explore the connection between public libraries, their communities, and built environment (e.g., population densities, transportation infrastructure) to understand all segments', including vulnerable populations', access. This 3-year study is guided by 6 questions:

1) What are the resources, policies, internal and external relationships, public librarian roles, and personnel issues of an effective DPRR that address preparedness, response, and recovery? How do these elements differ by geographic location and locale?
2) To what extent do disaster plans reflect special circumstances in meeting the needs of vulnerable populations (e.g., children, elderly, disabled persons)?
3) How can public librarians engage and be prepared to serve community stakeholders in disasters?
4) Which policies should guide evaluation and updating of the DPRR, staff training, and turnover planning?
5) What are the barriers to effective public library use during emergencies among all segments of the population, including those that are at risk such as seniors? What are the associated challenges and potential solutions for varying urban and rural densities?
6) How would safety and emergency GIS-informed implementations differ from place to place, particularly in between high and low population density locations? What are scalable and transferrable solutions?

We will investigate these questions in three phases, with each phase's results being widely disseminated:

Phase I, Y1, (RQ1, RQ4) – In partnership with the State Library of Florida, we will survey Florida public library directors to determine the types of disaster plans they have in place. Participants will provide copies of

[1] https://www.imls.gov/sites/default/files/publications/documents/imls-hhis-report.pdf

their disaster plans for review and detailed analysis. Using Natural Language Processing, we will topic model the disaster plans' text to identify key aspects, including DPRR differences by locale and geographic location. With College of Engineering faculty who have extensive experience using GIS to improve community-focused disaster response, we will work closely with 3 PLAN members (Bay, Gulf, and Calhoun County Libraries) to review and evaluate their recent disaster services, policies, and plans.

Phase II, Y2, (RQ2, RQ3) –We will conduct a focus group of 14 Florida library directors (5 urban, 2 suburban, 7 rural) who provided their disaster plans in Phase I. In the focus group, public librarian directors will identify the resources, policies, internal and external relationships, librarian roles, and personnel issues that should be considered in the development of a contextually appropriate DPRR plan. The focus group will be transcribed and thematically analyzed using NVivo to identify contextually relevant aspects of existing and ideal plans.

Phase III, Y3, (RQ1, RQ2, RQ3, RQ4) – We will explore how the relationship between the county's Emergency Operations Center (EOC) and small/rural library directors guides DPRR development and implementation, and also address how the adopted DPRR will be evaluated, updated, and staff trained. We will distill our findings into recommendations, differentiated by location type and geography, and disseminate them at a culminating workshop held at the Florida Library Association annual conference with presentations and papers at other discipline relevant conferences (e.g., transportation, engineering).

Ongoing: GIS Analyses (RQ5, RQ6) – Ongoing GIS analysis will determine: 1) origins (the geometric centroids of the U.S. Census population block groups), 2) destinations (library locations), and 3) the roadway network of Florida based on Florida's Standard Urban Transportation Model Structure (FSUTMS). Between each population block group centroid and the closest library, identified by ArcGIS, the most accessible path will be determined. For example, the most accessible library branch may be in a neighboring county, which indicates the need to study the potential benefits of utilizing cross-county collaborations for better planning. Library accessibility scores for each population block group will be calculated for the Florida Panhandle. These scores will be utilized to inform smart and connected DPRRs for the Bay, Calhoun, and Gulf County Library Systems. We will also use these data to generate DPRR improvement models based on Phase I survey results.

DIVERSITY PLAN. This study focuses on aggregate and at-risk populations served by public libraries. The elderly population is expected increase 79% in the next two decades and vulnerable populations are likewise predicted to grow. The research results will inform public libraries and relevant agencies' efforts to develop efficient plans to ensure that high need groups are not isolated in disaster situations.

NATIONAL IMPACT. "*Small and rural libraries…serve a strategic role in extending public services to residents…hard to reach by other means [and] are accustomed to linking…to other social, educational and economic development programs*"[2]. This study has immediate assistance for three Hurricane Michael devastated rural public library systems and national implications for the 75% of small and rural libraries, especially in or near coastal areas, that lack disaster plans. Through an aggressive dissemination plan in and beyond libraries, our focus on varying population densities and high-need groups will inform policymakers and public librarians of best practices and strategies for research findings adoption, education, and integration.

BUDGET SUMMARY: Total funds requested: **$667,513**: Faculty Salaries, Fringe ($143,116); Graduate Assistants Salary, Fringe ($150,401); Data Collection and Dissemination Travel ($62,880); NVivo Tokens ($500); Consultant (Evaluator) ($30,000) Participant Costs ($3,250); Graduate Assistants Tuition ($66,686); and FSU's federally 54% IDC ($210,680).

[2] https://www.imls.gov/assets/1/AssetManager/Brief2013_05.pdf