Enabling Disaster Resilience in Aging Communities via a Secure Data Exchange

Disasters disproportionately impact older adults who experience increased fatality rates; such individuals often live in age-friendly communities and senior health facilities (SHFs). During a crisis, older adults are often unable to shelter safely in place or self-evacuate due to a range of physical conditions (need for life-sustaining equipment, impaired mobility) and cognitive afflictions (e.g. dementia, Alzheimer’s). First responders assisting older adults could benefit from seamless, real-time access to critical life-saving information about the living facilities (e.g., floor plans, operational status, number of residents) and about individual residents (e.g., health conditions such as need for dialysis, oxygen, personal objects to reduce anxiety). Such information, siloed within organizational logs or held by caregivers, is inaccessible and/or unavailable at the time of response. This interdisciplinary project brings together IT, geriatrics and resilience experts with disaster-response agencies and SHF providers to create information preparedness and transform disaster resilience for older adults.

The team will design, develop and deploy CareDEX, a novel community contributed data-exchange platform, that empowers SHFs to readily assimilate, ingest, store and exchange information, both apriori and in real-time, with response agencies to care for older adults in extreme events. The CareDEX information pipeline enables SHFs to capture individual information about changing health conditions and personalized needs and share them with responders to help improve response. Information co-produced with civic partners will identify and refine resident-specific data via tools for proactive collection/update. Given the sensitive nature of personal information, e.g., health-profiles, CareDEX will incorporate policy-based information sharing mechanisms that balance needs for individual privacy with authorized information release. CareDEX’s hybrid-cloud architecture seamlessly enables data to be securely stored on-premise (at SHF) and in the cloud for remote access by responders and temporary caregivers. Relocation of older adults requires regional information (e.g. road-conditions, facility status) - CareDEX will integrate GIS tools to provide first-responders with up-to-date region-level situational awareness for dynamic decision-support. The prototype CareDEX platform will be co-developed with core civic partners, e.g. Front Porch (a nation-wide senior-care provider) and deployed at a SHF in Anaheim, CA. Collaborations with local response agencies (Los Angeles, Orange County, San Bernardino, San Diego) and national entities (FEMA, Red Cross, NFPA/FPRF) will mesh needs of emergency responders with caregivers. CareDEX will be evaluated using diverse scenarios - a wildfire event triggering relocation, wildfires coupled with a pandemic, and rapid onset earthquake events with small warning times and increased uncertainty.