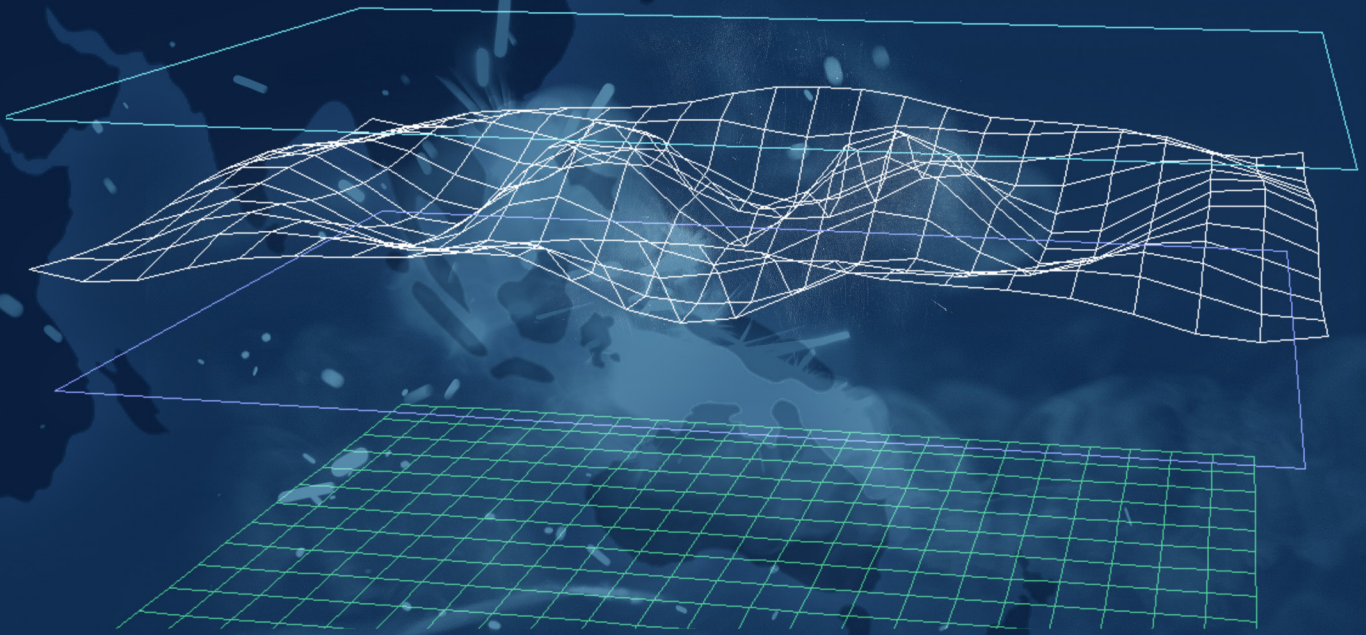# The Opportunity Project

GEO-COHORT

Sprint Information

The
Opportunity
Project

Using Geospatial Data to Help People Prepare for Disasters

CHALLENGE: Create digital tools that use data to help individuals and community leaders gain a better understanding of national and community hazards and threats and enable the public to take appropriate preparedness actions. Digital tools could leverage geospatial data to:
- help identify barriers to preparedness within communities;
- create innovative engagement platforms such as games that allow people to experiment and explore hazards and threats unique to their communities in a "low-risk" environment; and
- integrate with current preparedness messaging to help people, especially younger cohorts, better understand risks and encourage preparedness actions.

PROBLEM: A significant number of young Americans are not aware of the risks they face and are not taking meaningful preparedness actions to improve their chance of successfully weathering a disaster. Personal and family preparedness can greatly impact individuals' and communities' ability to successfully and rapidly recover should disaster strike. However, in the 2016 National Household Preparedness Survey, only 45% of respondents reported having a household emergency plan. Additionally, people who consider preparedness part of every life tend to be 65 years of age or older, white and male, while people who intend to prepare but have yet to get started tend to be 45 years of age or younger, black or Hispanic, and have children at home. Furthermore, a 2014 study found that the 46% of the US population who fall into the "Not On Their Radar" Preparedness Profile are more likely to be 18-34 and less likely to own a home. This group of people tend to perceive barriers to preparedness like cost, time, and access to information. They are also less likely to take significant steps to prepare.

WHY THIS PROBLEM IS IMPORTANT: Current research suggests that exposure to preparedness messaging shows a significant relationship to taking preparedness action—almost doubling the percentage of individuals with an emergency plan (58%) compared to those not exposed to preparedness messaging (34%). A major objective of FEMA's strategic effort to build a culture of preparedness across the nation is helping people to prepare for disasters. As demonstrated on September 11, 2001, the preparedness level of private citizens can weigh heavily on the outcome of an incident, especially a no-notice event. On that day, only 5.36% of building occupants who perished in the World Trade Center collapse worked below the impact zones. This low mortality rate is attributed to the preparedness advancements set in place prior to September 11, 2001, and led the 9-11 commission to conclude that citizens across the nation need to be prepared to maximize their odds of survival should disaster strike. Changing attitudes and achieving a true culture of preparedness across the nation will require a paradigm shift in how we deliver information, particularly to younger Americans.

VISION: Through access to data and user friendly digital tools, more Americans are aware of the hazards they face and what they can do to protect themselves and their families, and take action to get prepared.

TARGET AUDIENCE: Individuals ages 18-34 and influencers within communities, to include faith leaders, emergency managers, and leaders of civic organizations.

POTENTIAL DATASETS:

- US Census Bureau American Community Survey – population data
- USGS earthquake data
- FEMA 2016 National Household Survey - preparedness perceptions
- NOAA National Centers for Environmental Information - data on floodplains, hurricanes, etc.
- US Fire Administration – wildfire data
- Ready Campaign (validated protective actions)
- Data sets on terrorist and other man-made threats

Harnessing Data and Leveraging Digital Tools to Combat the Opioid Crisis

CHALLENGE: Create digital tools and data sharing capabilities to support decisions across the broad range of stakeholders responding to the opioid crisis, such as public health, public safety, law enforcement, community groups, the private sector, and individuals.

PROBLEM: Opioid misuse, addiction, and overdose have reached crisis levels in the United States. From 1999 to 2016, the number of overdose **deaths involving opioids increased more than five-fold, from about 8,000 to over 42,000**. Both prescription and illicit opioids contribute to this trend. The opioid crisis extends beyond those suffering from addiction and overdose, to their families and communities. For example, the rate of **neonatal opioid withdrawal syndrome increased more than five-fold between 2004 and 2014** with rising exposure to opioids before birth. Local and state governments struggle to provide opioid treatment and preventive services and target law enforcement efforts against the increasing traffic of illicit opioids. Meanwhile, opioid addiction removes patients and caregivers from the workforce. The White House Council of Economic Advisers recently estimated the economic **toll of the opioid crisis at $504 billion in 2015, or 2.8 percent of GDP.**

WHY THIS PROBLEM IS IMPORTANT: The opioid crisis exerts a tremendous human and economic toll on America, and shows no sign of abating. The Administration's Office of Science and Technology Policy established a Fast-Track Action Committee (FTAC), which identified critical data gaps that hinder effective decision-making in response to the opioid crisis, from the Federal level to state and local governments, to community groups and individuals.

New digital tools, data integration, and data science approaches could address key questions such as:

1. How do geographic location and local factors influence opioid misuse and addiction, and the effectiveness of prevention and treatment programs based on location?
2. How can data from law enforcement, public health, forensic laboratory, and other complementary sources be integrated and analyzed to guide real-time response?
3. How do clinical and medical coverage policies for pain management, and opioid misuse and addiction, influence the landscape of the opioid crisis?
4. What is the geographic and socio-cultural context of stigma with opioid misuse and addiction?

VISION: Holistic data systems provide real-time, large-scale, geographically-specific, multivariate data and data-analysis capabilities to guide decisions at all levels and reduce the burden of the opioid crisis on communities nationwide.

TARGET AUDIENCE/END USERS: Physicians, hospitals (care providers); CMS, insurers, VA (payers); patients; researchers; public health professionals; State and Local Health Departments; Policy makers; Elected Officials, Law Enforcement

POTENTIAL DATASETS:

• TBD

Helping Tribal, State and Local Governments with Local Address Data Collection

CHALLENGE: Develop resources that help tribal, state, and local governments to create and maintain open address point data. These resources might include:

- Tools that can be used in the field and in the office to collect, validate, maintain and share data
- "Seed" data that can serve as a starting point for data collection and can be shared openly (address lists, address point data, parcel data, structure outlines, imagery)
- Linkages to open data sharing platforms

PROBLEM: Many state and local governments do not have a database of addresses with geospatial coordinates (also known as address point data), which is critical for high priority issues like emergency response. In some cases, where the governments have address point data, it is not openly available due to propriety or legal constraints. Many state and local governments do not have the resources to plan, implement, and maintain address point data collection activities. Resources needed to overcome data collection challenges include software tools, starter data, human capital, collection processes and guidelines, and data system integration.

WHY THIS PROBLEM IS IMPORTANT: Tribal, state, and local address point data are critical to all levels of government. During catastrophic events such as hurricanes and wild fires, residences and businesses cannot be located using traditional means of address navigation since the structures, street signs, and landmarks no longer exist. An easily accessible data base of reliable, accurate, and uniform/standardized address point data can meet the immediate needs of emergency responders and communities in crisis. A complete address data base is also needed to accurately count citizens through censuses and surveys in order for governments to receive their share of federal funds and be accurately represented. For example, in 2015, Census Bureau data was used to distribute more than $675 billion in funds. Address data is also critical for the Master Address File (MAF) used for the decennial census and ongoing surveys.

For the Department of Transportation (DOT), complete, accurate, and up-to-date addresses with location data is critical to transportation safety and the National 911 Program, which envisions an emergency response system that best serves the public, providing immediate help in all emergency situations. Mail delivery, real estate and land use decisions, and public health tracking also depend on address point data. The Census Bureau and DOT are committed to improving data completeness, accuracy and currency, which are key to successful development of a National Address Database (NAD) as a National Geospatial Data Asset (NGDA).

VISION: Outcomes from The Opportunity Project provide the momentum needed for tribal, state, and local governments to begin to fill in address point data gaps across the nation and to share the data openly, and help to share best practices for workflows and processes, including metadata.

TARGET AUDIENCE: Tribal, state, and local governments.

POTENTIAL DATASETS:

- The National Address Database (NAD) version 1 (beta)
- U.S. Postal Service (USPS) enhanced NAD (includes zip codes and standardized addresses)
- TIGER/Line Roads
- TIGER/Line Address Range-Feature
- TIGER/Line Address Range-Feature Name Relationship File
- TIGER/Line Address Ranges
- USA Structures – building structure outlines (available for Delaware, Hawaii, Louisiana, Maryland, Pennsylvania, Texas, Virginia, West Virginia)
- Suggested format for address point data: The NAD Schema (data sets should at least include fields identified as "always used")
- USDA NAIP Imagery

Identifying and Strengthening Civic Environmental Stewardship

CHALLENGE: Develop tools that visualize and provide access to the patterns, overlaps, and gaps in environmental stewardship efforts in order to identify local civic groups that support community quality of life and well-being, strengthen community resilience and emergency preparedness, and amplify positive outcomes.

PROBLEM: Worldwide and across the United States, cities and towns are grappling with aging infrastructure, fluctuating populations, and a changing climate. Public agencies cannot address these issues alone, which has led to involving a growing network of civic stewardship organizations and volunteers to take care of the city. Civic stewards ranging from NGOs to grassroots groups of neighbors engage in conservation, management, monitoring, education, advocacy, and transformation of local environments – through activities like forest restoration, storm water management, community gardening, and more. But better tools are needed to identify and track these groups, which often can be informal and hard to find. Although public maps show green infrastructure and open space (e.g. forests, parks, trees, gardens, and bioswales), there is no comprehensive map showing social infrastructure, like the civic groups that care for--or steward--these sites in U.S. cities.

Over the past decade, USDA Forest Service research has found that civic stewardship groups focused on different issues (e.g., tree care, clean water) can be working in the same neighborhood, yet unaware of each other. Also, we have found that some groups may be working on similar issues, but in different places and without coordination. In order for stewards to overcome this isolation and maximize the potential for productive collaboration, communities need digital resources to locate and connect stewardship groups, as well as community leaders and interested residents, across an entire town, city, or region.

WHY THIS PROBLEM IS IMPORTANT: Communities need maps of social infrastructure because civic groups are a crucial component of governing a city's environment. Public agencies know which lands they manage and tax maps document private property ownership, but civic groups that engage in stewardship can often be more difficult to identify and locate. Research has found that civic stewardship groups focused on different issues (e.g., tree care, clean water) can be working in the same neighborhood, yet unaware of each other. Some groups may be working on similar issues, but in different places and without coordination. In order for stewards to overcome this isolation and maximize the potential for productive collaboration, communities need digital resources to locate and connect stewardship groups, as well as community leaders and interested residents, across an entire town, city, or region.

To help solve this problem, the USDA Forest Service's Stewardship Mapping and Assessment Project (STEW-MAP) created a reliable, replicable survey methodology for identifying civic stewardship groups' presence, capacity, geography, and social networks. This method has been piloted and prototyped in 12 different locations globally, helping to identify thousands of civic stewardship groups. Collaborators with expertise in interactive mapping, data visualization, and database development can help to fully bring these new datasets to life for end users, providing digital resources to stewardship groups that are organized, but lack resources. Digital tools can leverage this data for social networking, emphasizing the importance of collaboration and flows of knowledge and resources. Tools could also combine STEW-MAP data with other publicly-accessible datasets to better understand the contributions and impacts organizations are having on the environment at local and landscape scales.

VISION: Primary data such as STEW-MAP are developed into digital tools and applications to visualize, recognize, and harness civic capacity, strengthening both our environment and our democracy. By recognizing and connecting the efforts of these groups, we gain a better understanding of existing civic capacity, create pathways for collaboration, and improve the distribution of resources in a city.

TARGET AUDIENCE: Public agencies, NGOs, designers, funders, researchers, students, neighborhood groups, and community organizers in locations TBD (may include NYC, Baltimore, San Juan, PR, and North Kona, Hawaii)

POTENTIAL DATASETS:

- Stewardship Mapping and Assessment Project (STEW MAP)
- US Census datasets
- Urban Tree Canopy datasets
- National Land Cover Dataset
- Orthoimagery
- Enviroatlas
- TNC's Coastal Resilience Tool