Resiliency from the ground: Reports from the iCAR projects:

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OVERALL RESEARCH GOALS

- To identify *patterns* of biophysical and socio-economic vulnerability in St. Petersburg and surrounding communities;
- To identify the *specific challenges* and *needs* of communities facing these two types of vulnerability with specific focus on marginalized communities;
- To assess *preparedness*, *understanding*, and *resilience* to climate related weather events.
- To assess what *information* is being received by disparate communities, how communities learn about problems and solutions to climate-related events, and how *to improve communication* around these issues to marginalized communities in particular.

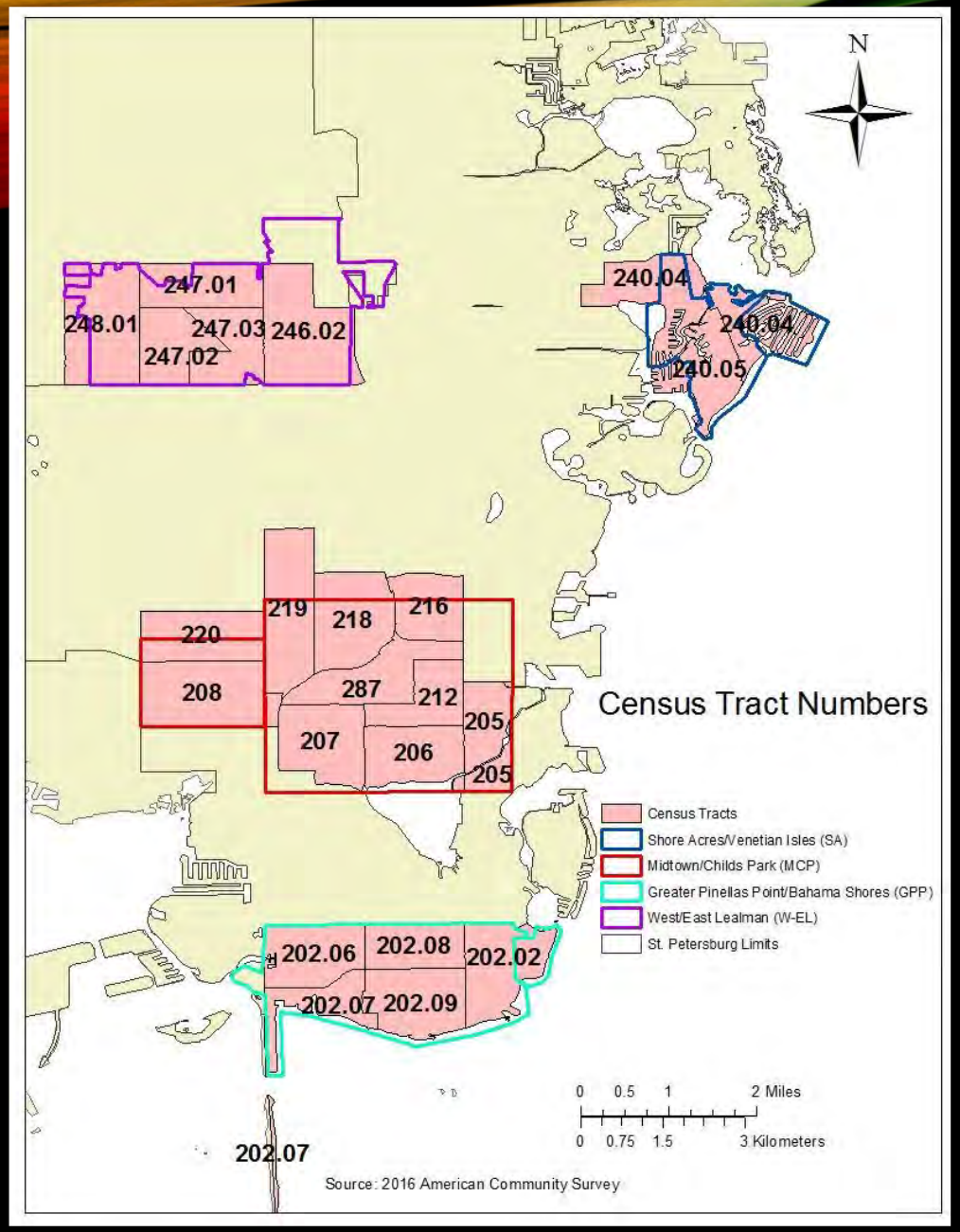
In the context of both climate literacy and climate resiliency

PROJECTS

- ✓ The Role of Crowdsourced Data, Participatory Decision-Making and Mapping of Flood Related Events - completed
- ✓ Tale of Two Neighborhoods: Biophysical and Socio-Economic Vulnerability to Climate Change in Pinellas County, Florida - completed
- ✓ Coastal flooding: An integrative analysis of socio-economic vulnerability and its relationship to successful coastal adaptation and resilience - completed
- Crowdsourced Flood Mapping & STEM Education, A Geospatial Analytical Approach – to be completed in November
- Public Responses to Flooding and Severe Weather: Utilizing Spatial Distribution in Identifying Influencing Components – on going
- Community Resiliency Information System (CRIS) Assessing Resiliency in Diverse Communities – recently launched
  - Role of Personal Network and Resiliency after Disasters– to be launched Spring 2020

OVER ALL METHODS

- Community-based qualitative research methods (Johnson 2013).
  - Survey data:
  - Interviews:
  - Group meetings:
  - Participant observation at community events/meetings
- Analysis of *crowd-sourced data* on self-reported flooding and weather-related events using See-Click-Fix
- *Mapping* of biophysical and socio-economic vulnerability measures
- Integrated GIS analysis



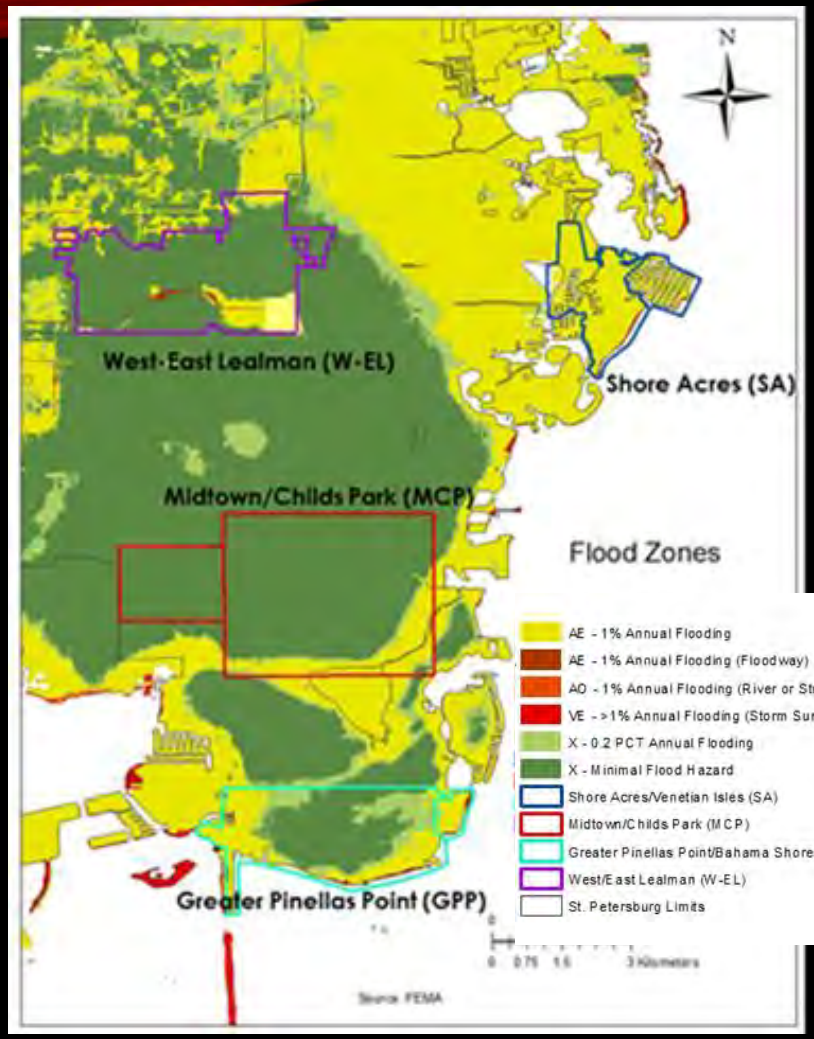
STUDY AREAS

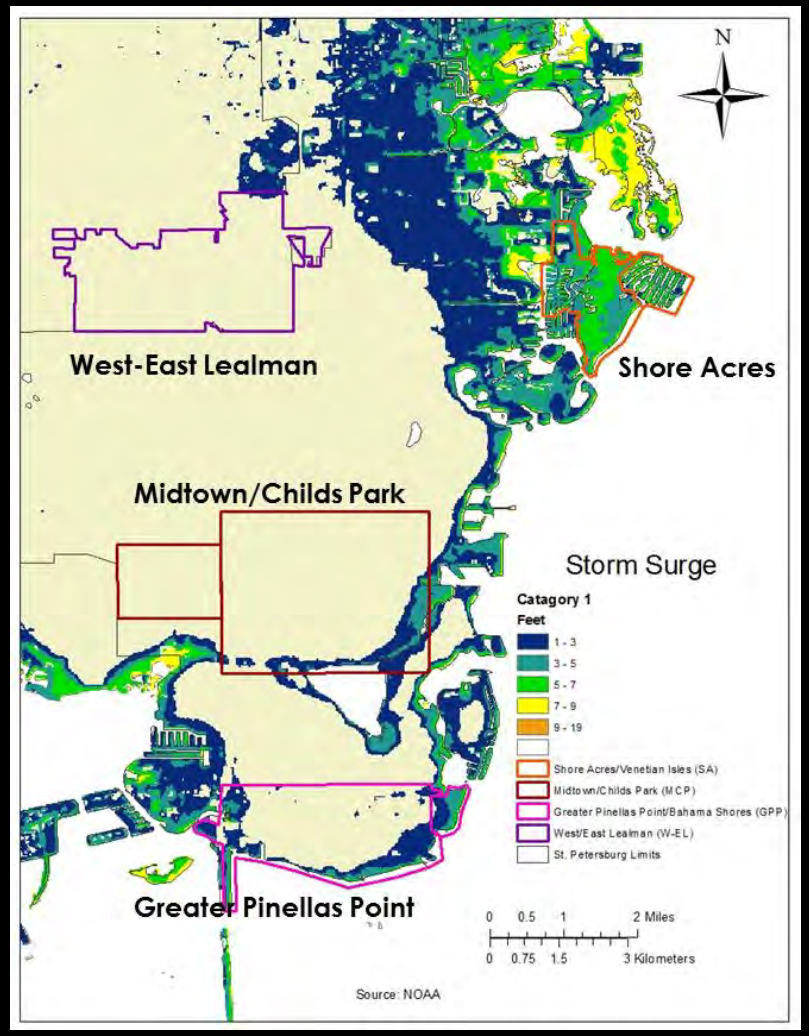
Midtown
Child's Park
Shore Acres
Venetian Isles
Bahama Shores
Greater Pinellas Point
West – East Lealman

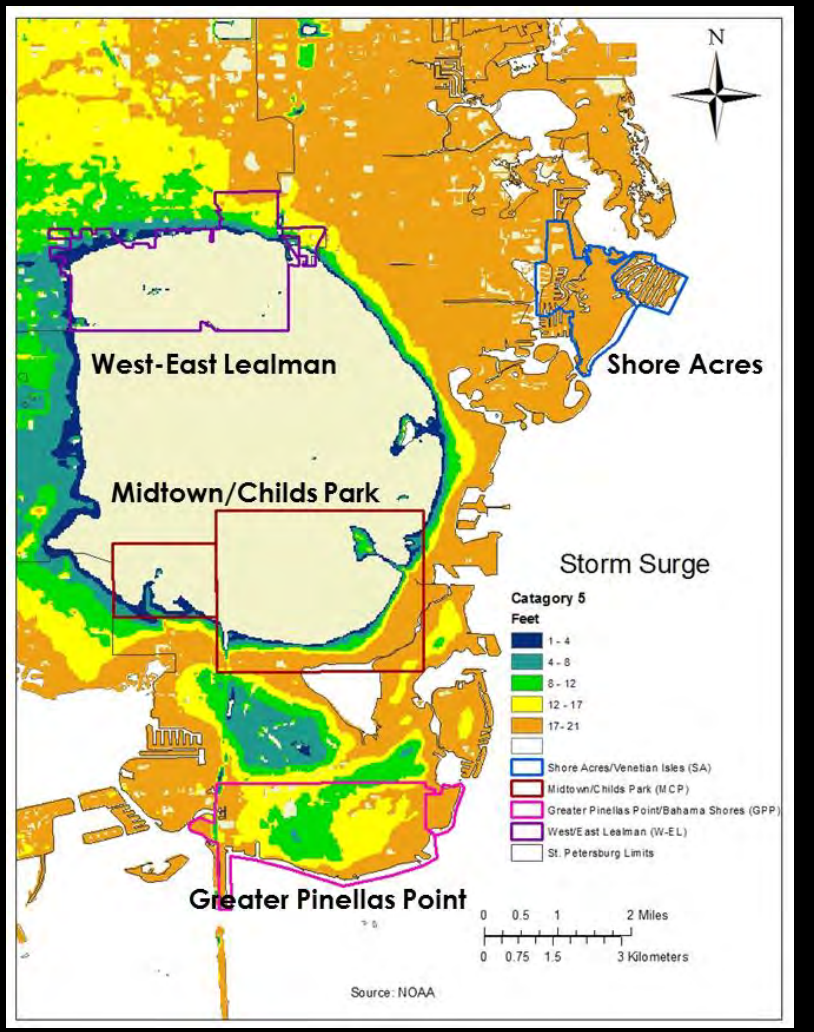
KEY FINDINGS

Socio-economic and biophysical vulnerabilities

BIOPHYSICAL VULNERABILITY

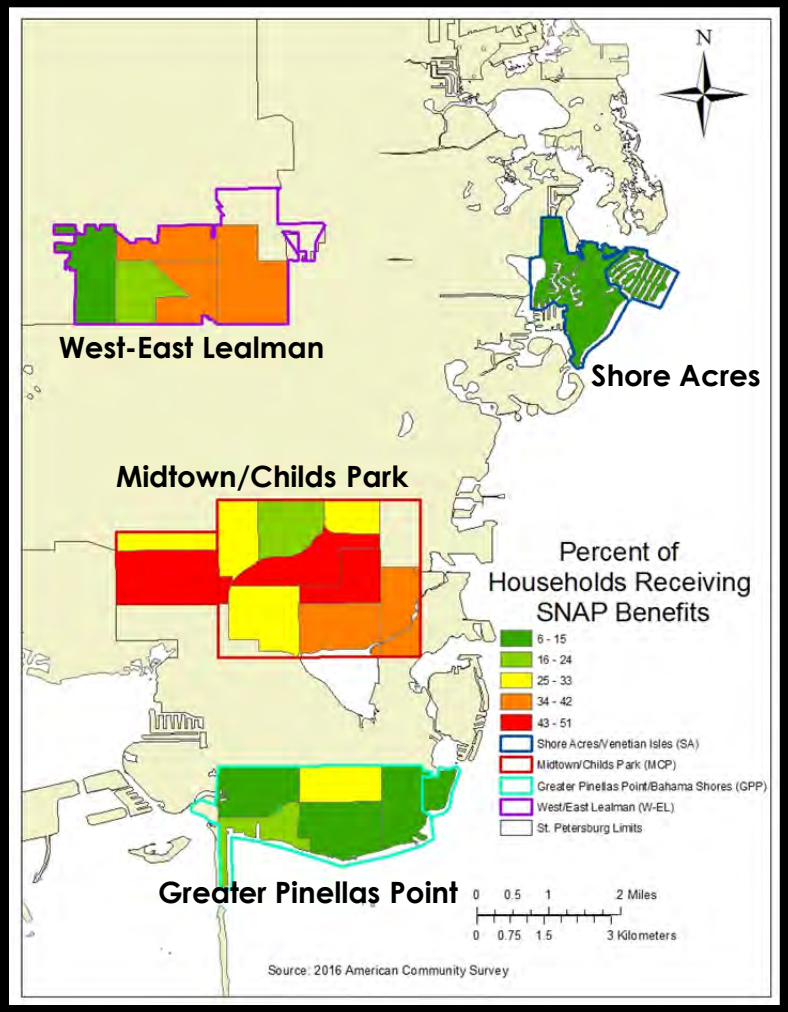




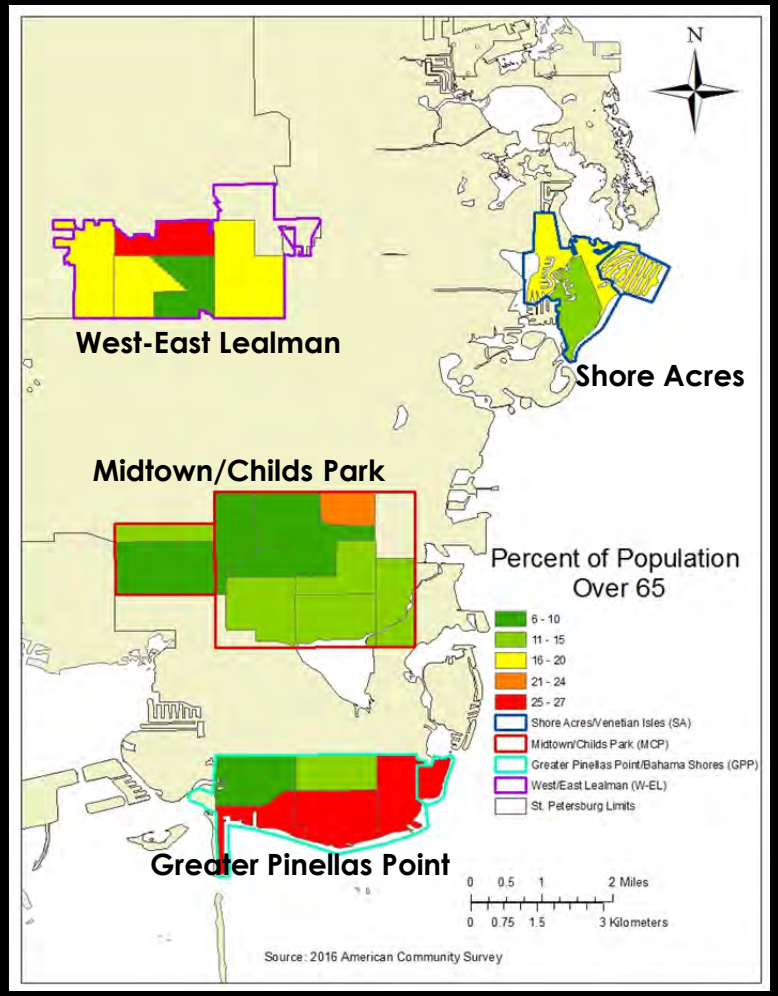


SOCIOECONOMIC VULNERABILITY

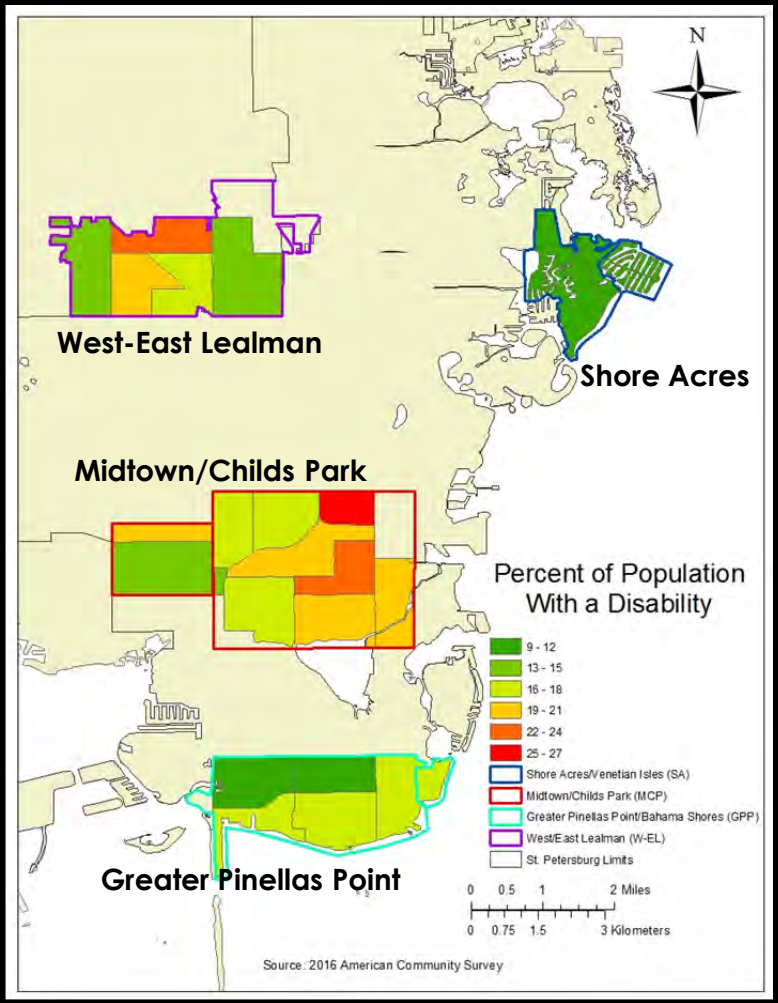
SNAP Recipients



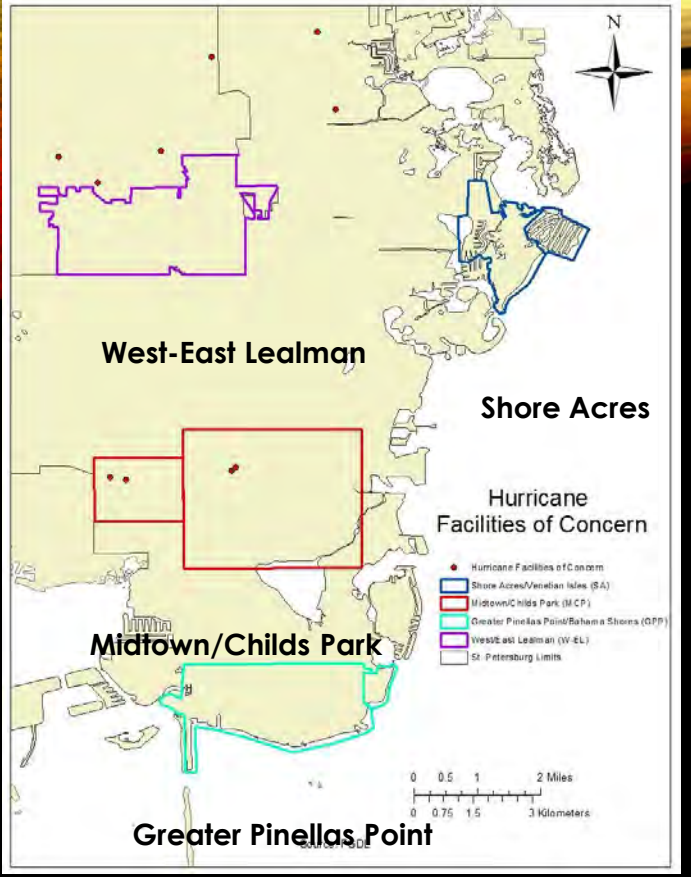
% of Population 65 and up

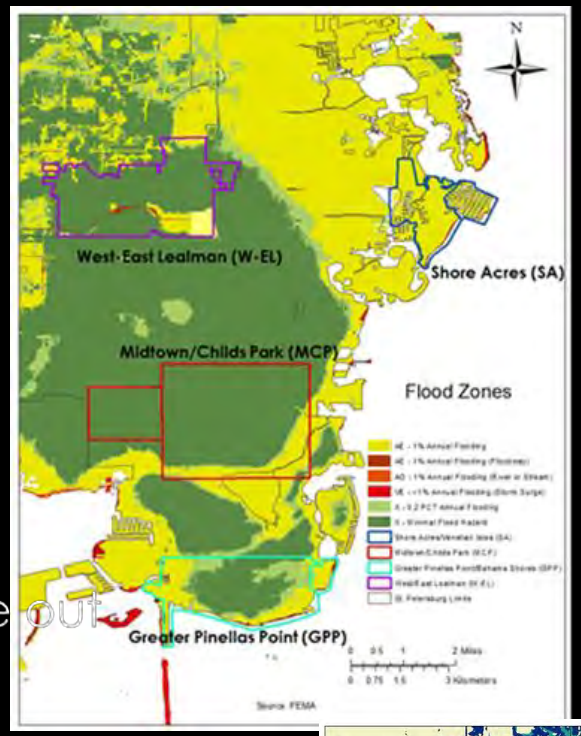


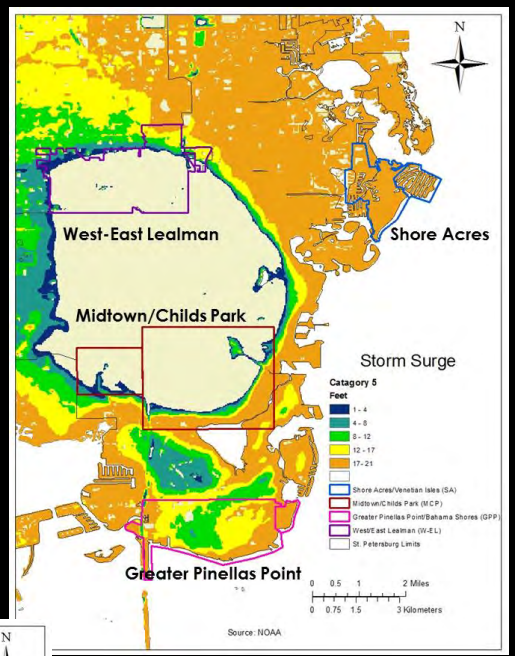
% of Population with disability

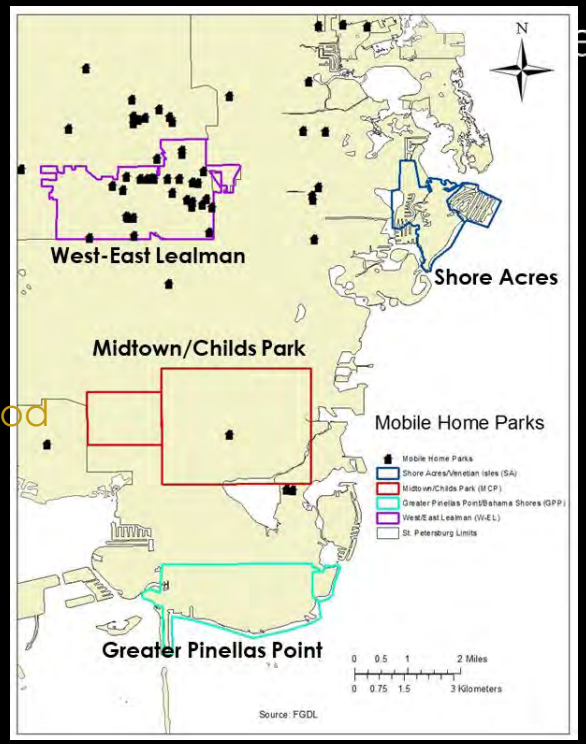


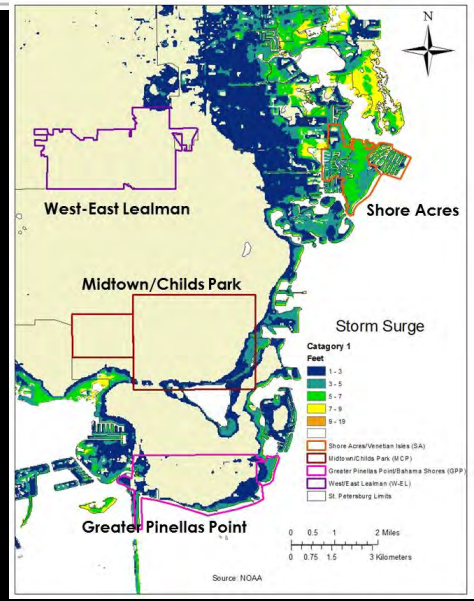
CRITICAL INFRASTRUCTURES /STRUCTURAL VULNERABILITY





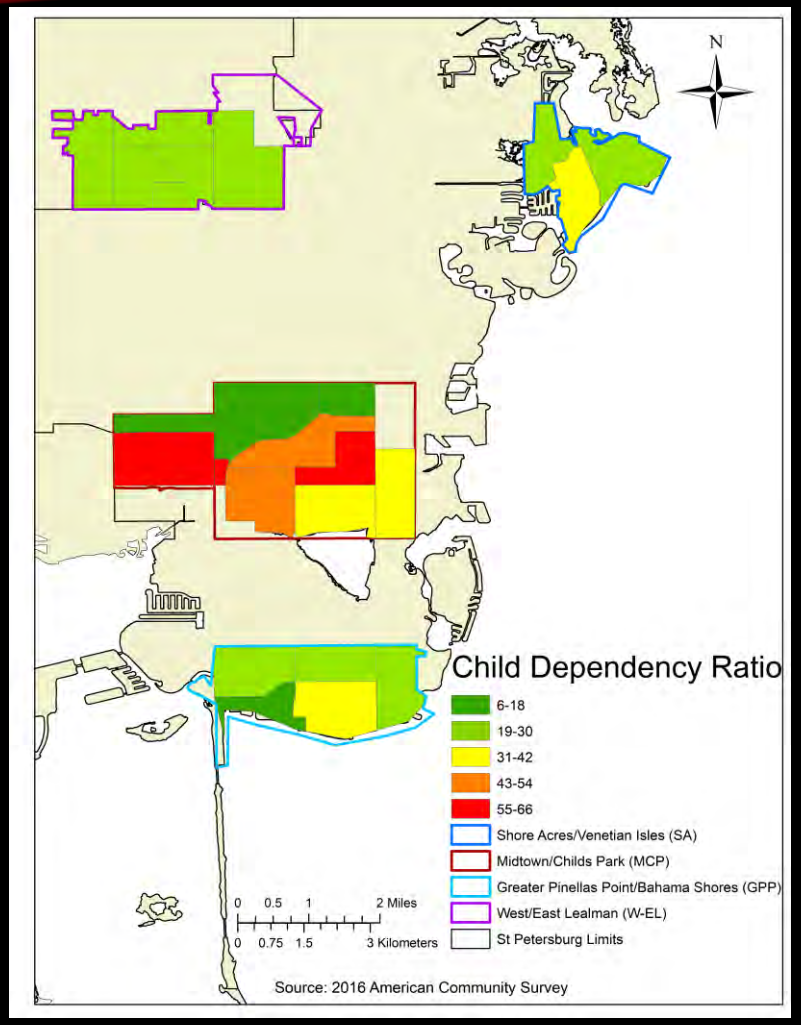


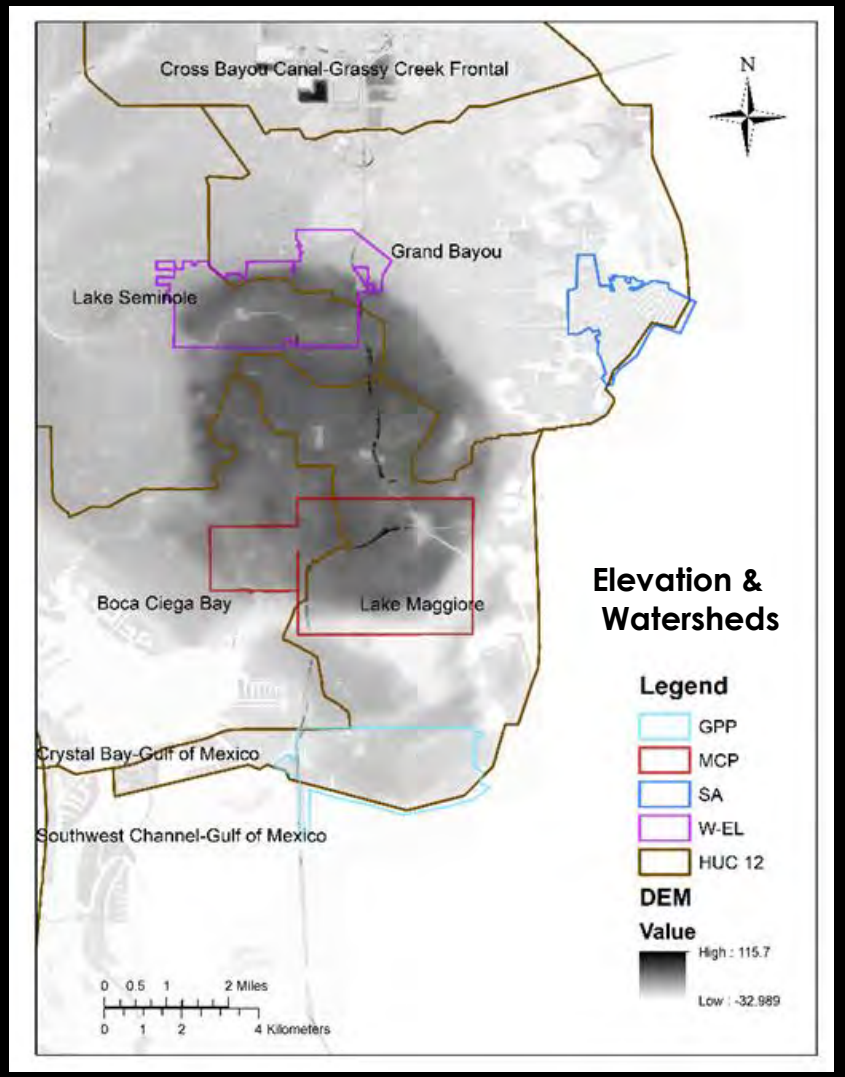


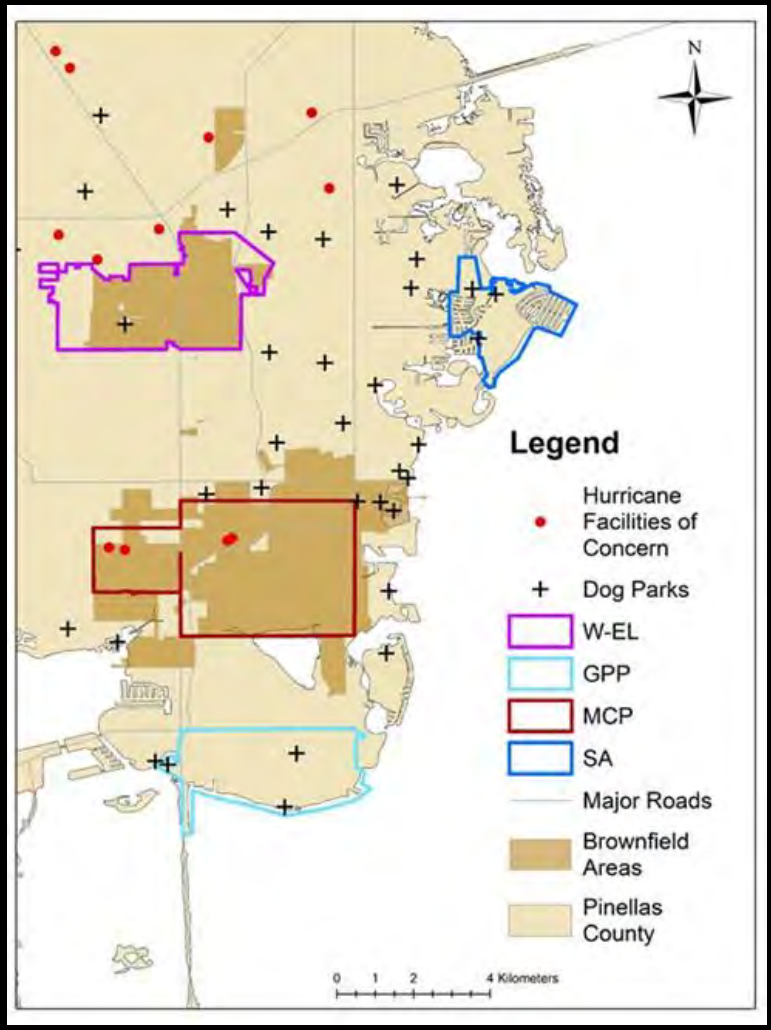


We compared storm surge and flood zones with these facilities

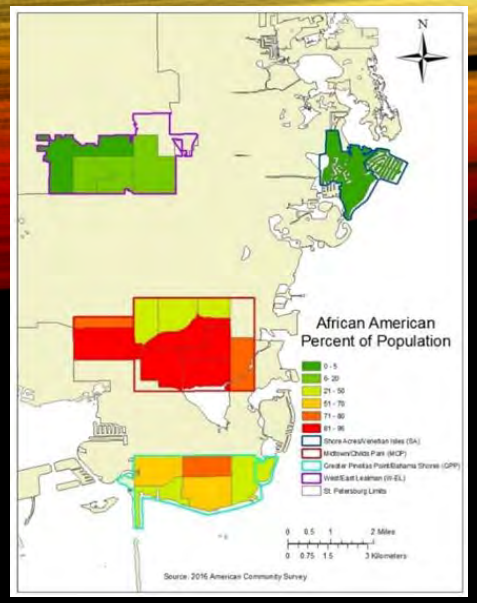
EXAMPLES OF COMBINED RISK

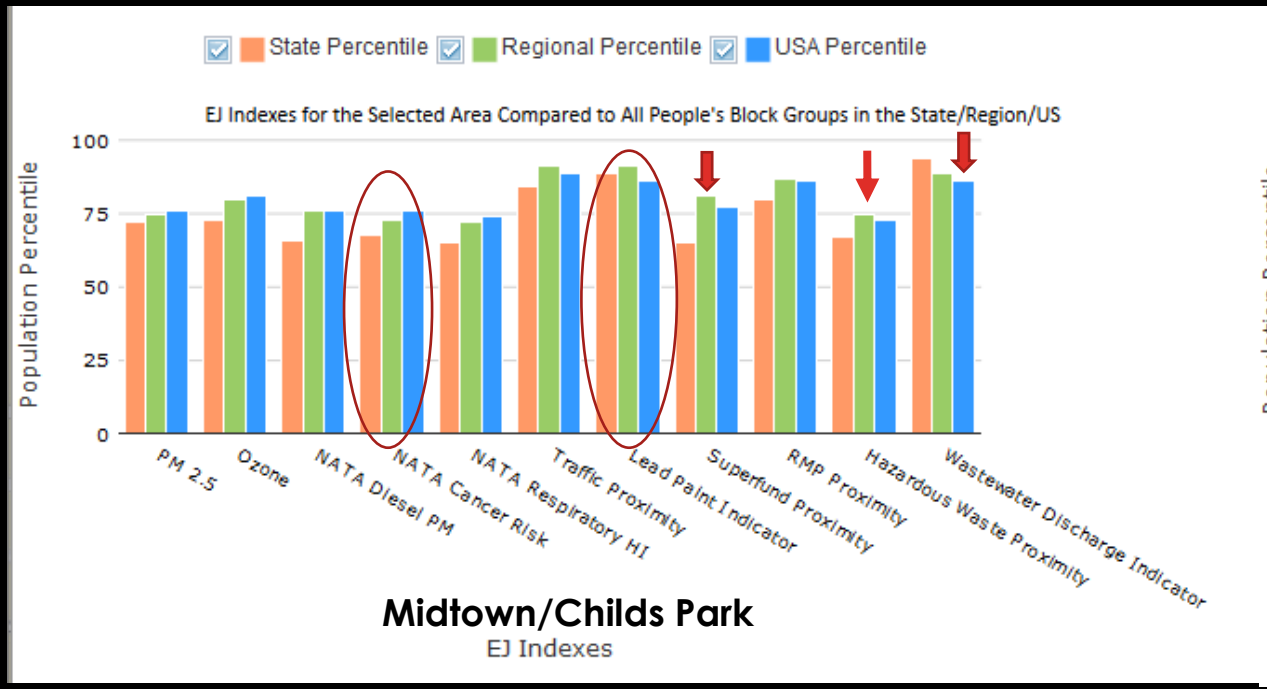


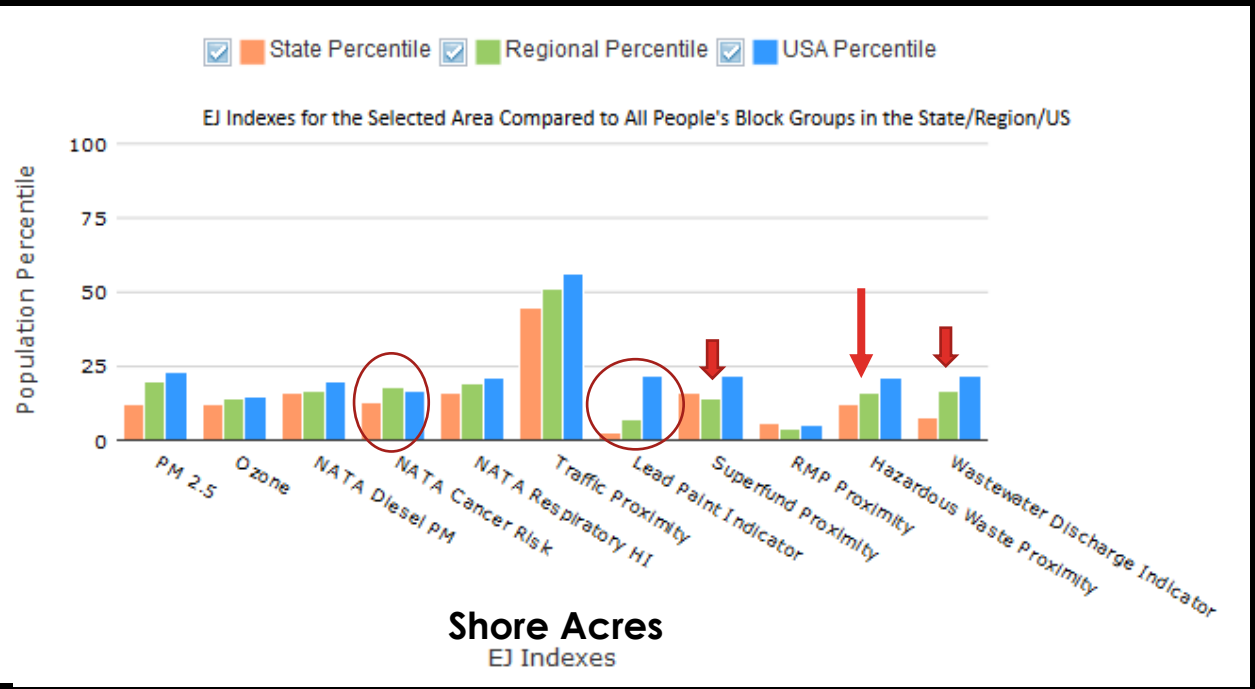




ENVIRONMENTAL JUSTICE INDEX







Environmental Justice Index Source: https://ejscreen.epa.gov/mapper/

More People are exposed to environmental hazards in MCP as compared to SA in all categories

SUMMARY OF FINDINGS

- Shore Acres (SA) and Greater Pinellas Points (GPP) neighborhoods have greater '**potential for resiliency**' (in the context of access to resources, income and education) in spite of their increased biophysical vulnerability than Midtown/Childs Park (MCP) and West East Lealman (W-EL).
- While Midtown/Childs Park (MCP) and West East Lealman (W-EL) neighborhoods are not biophysically vulnerable, they are socio-economically vulnerable (in the context of poverty, unemployment, education, disability and dependence of SNAP as well as environmental risk/exposure).

Do policies need to address diverse needs of diverse communities

KEY FINDINGS

Infrastucture, Information and Flooding

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St. Petersburg, FL

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ISSUES

PTO - Trouble Report ▸ Closed

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1st Avenue South Saint Petersburg, FL

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0 thanks

SAY THANKS!

CLOSED TrafficE440 (Verified Official)

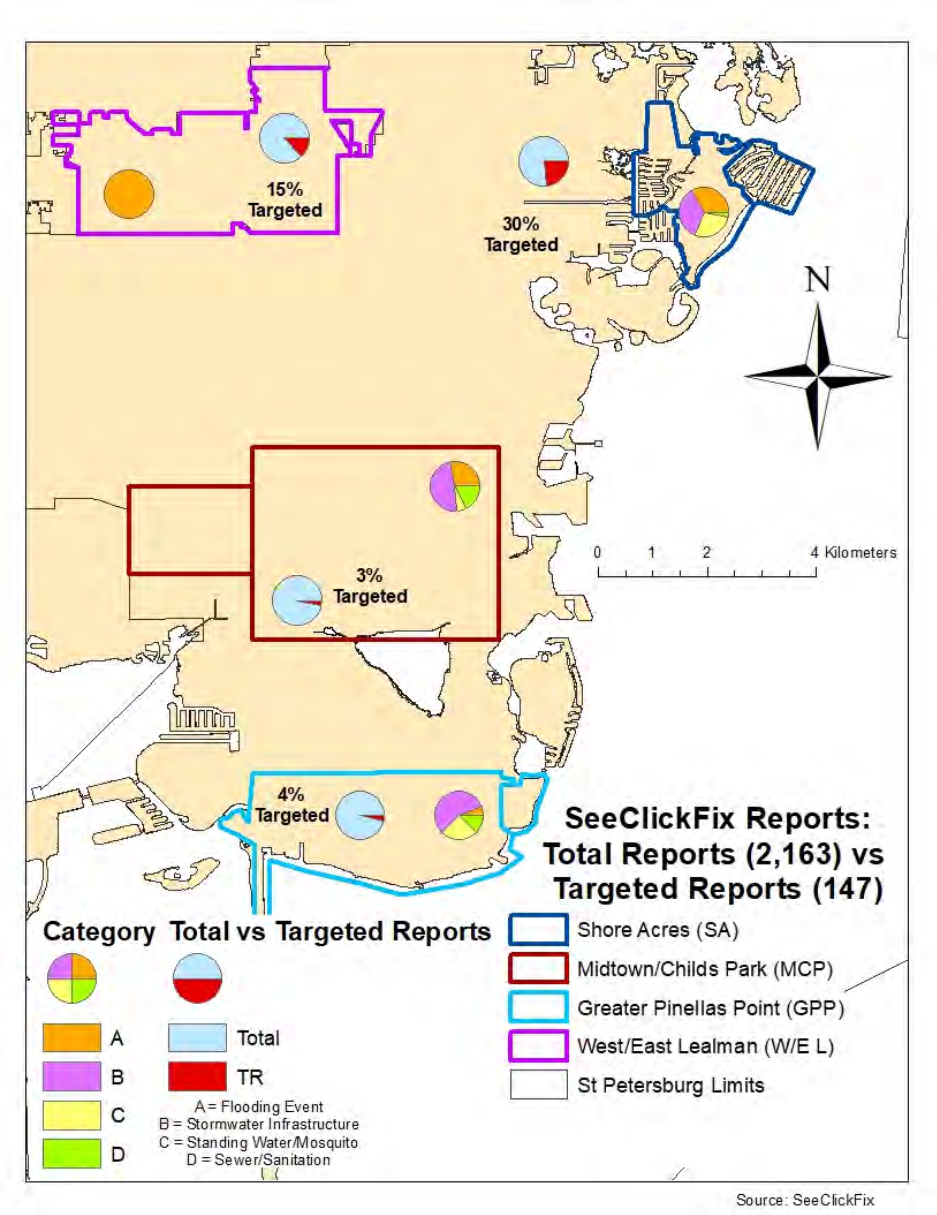
Replace and test monitor S/N 070604066 Tested Good-db
Check cabinet fan and adjust thermostat, vacuum cabinet. UPS-Failed
Replacement monitor S/N 110705105
Start 3:25am Finish 6:15am

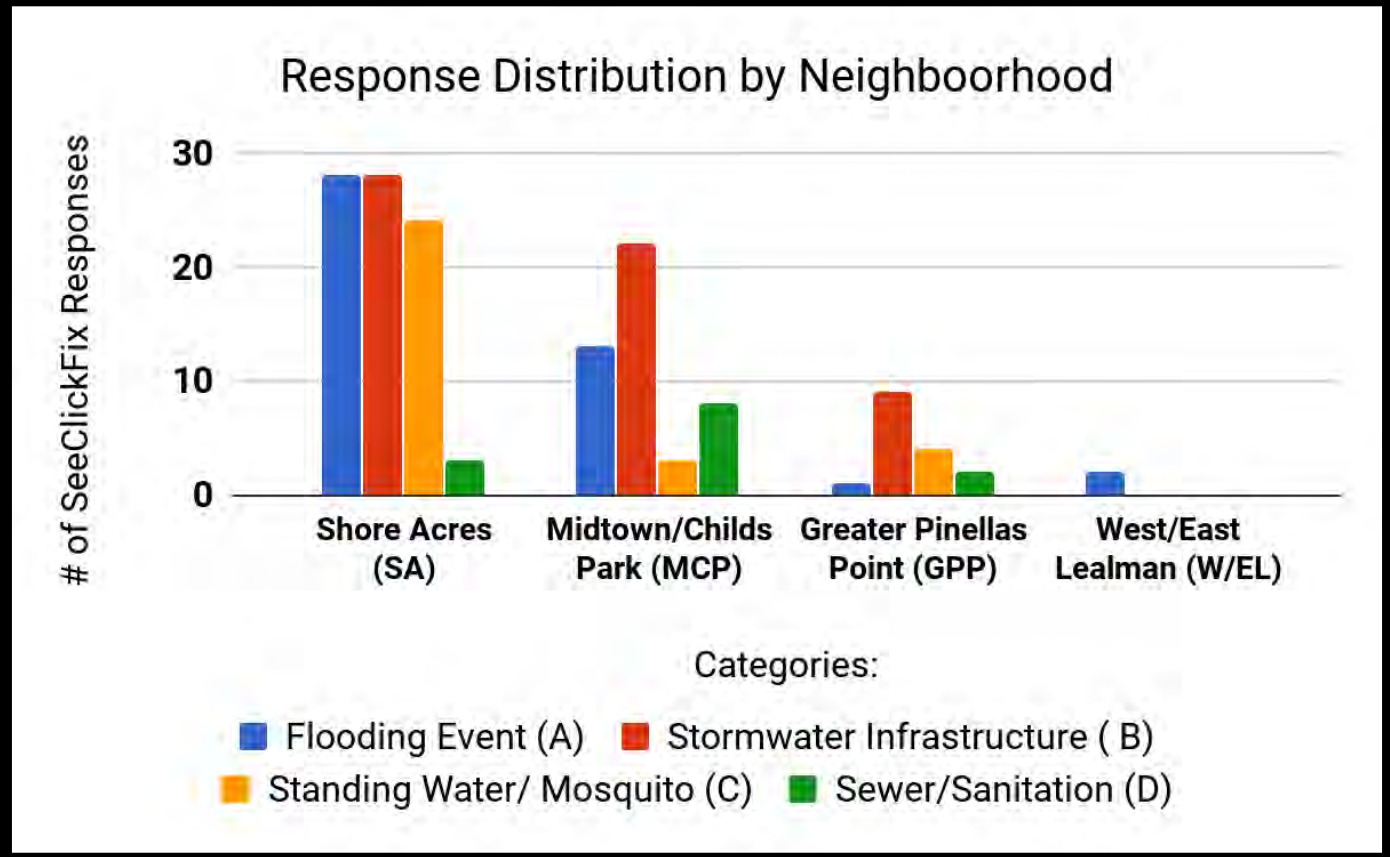
14 minutes ago · Flag

Write a comment...

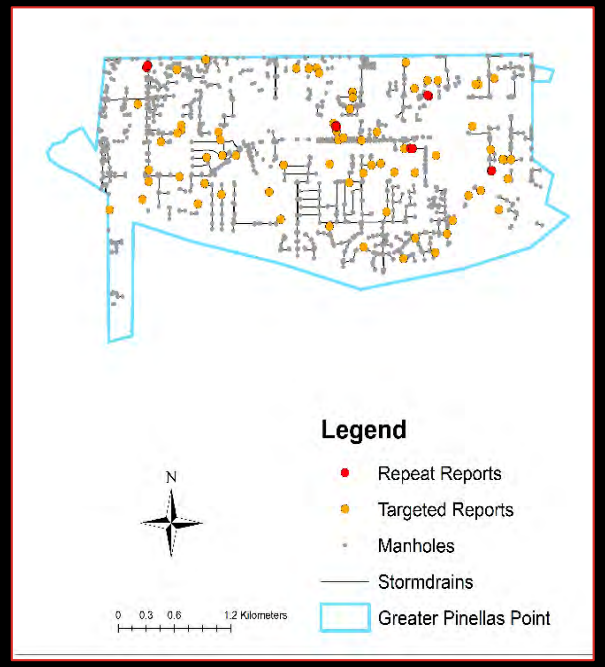
TOP USERS

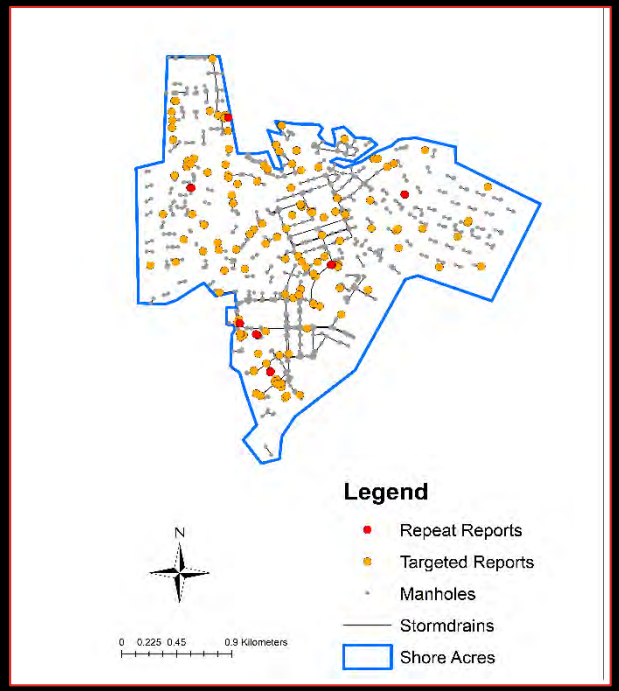
FLOODING RELATED CROWD-SOURCED DATA

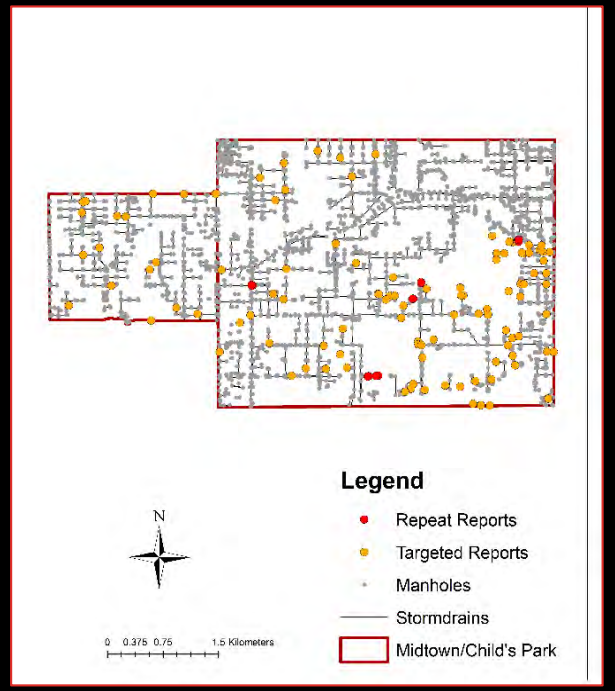


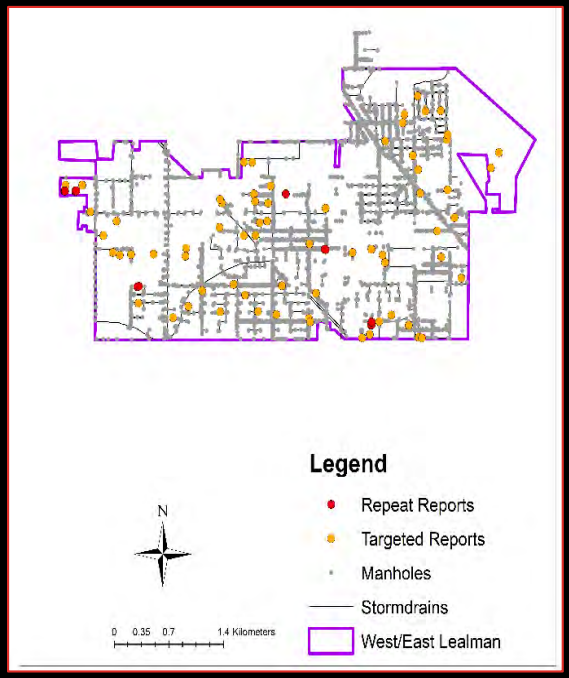


COMPARISON OF STORM DRAINS AND TARGETED AND REPEATED COMPLAINTS BY NEIGHBORHOODS

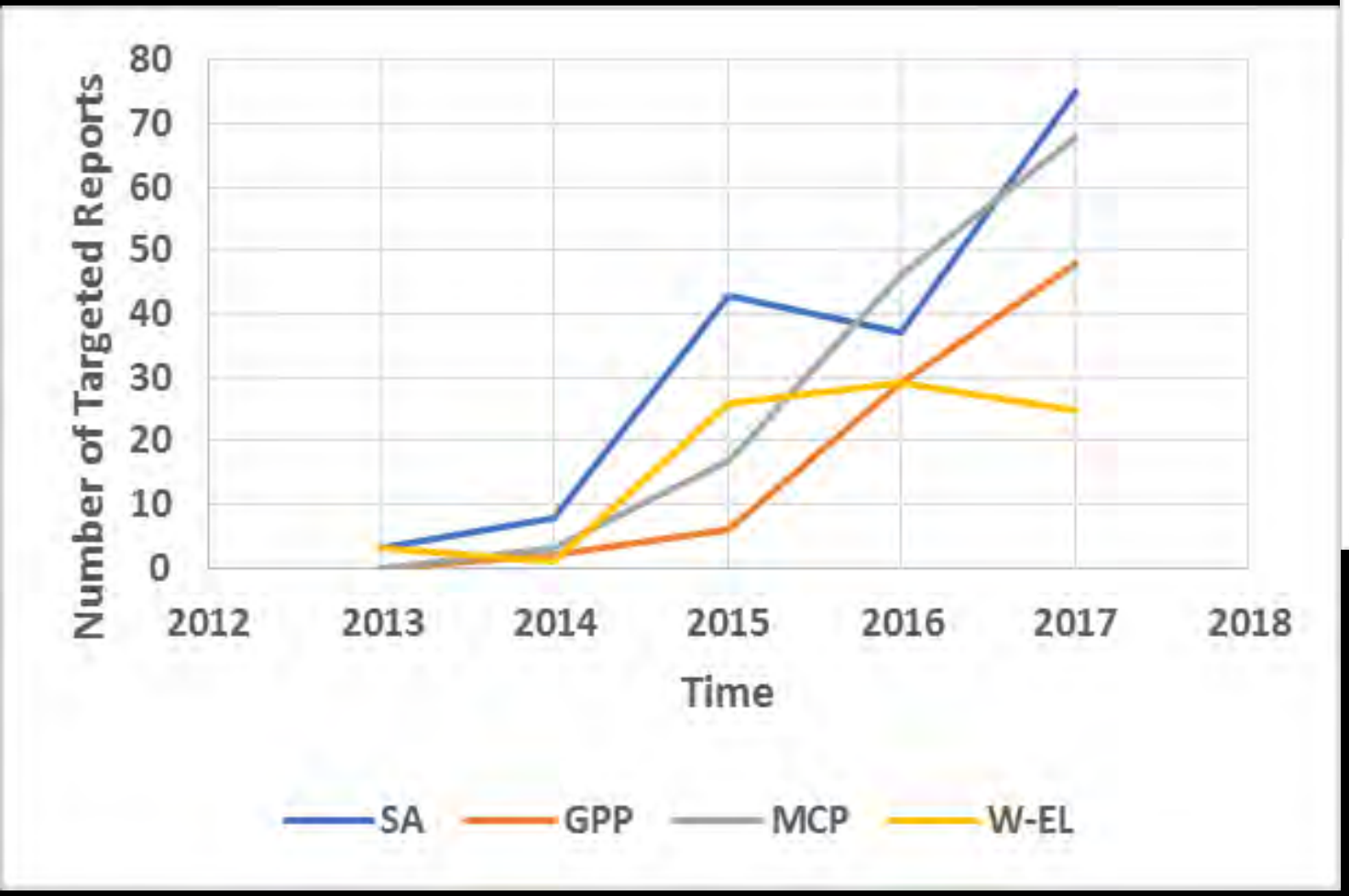


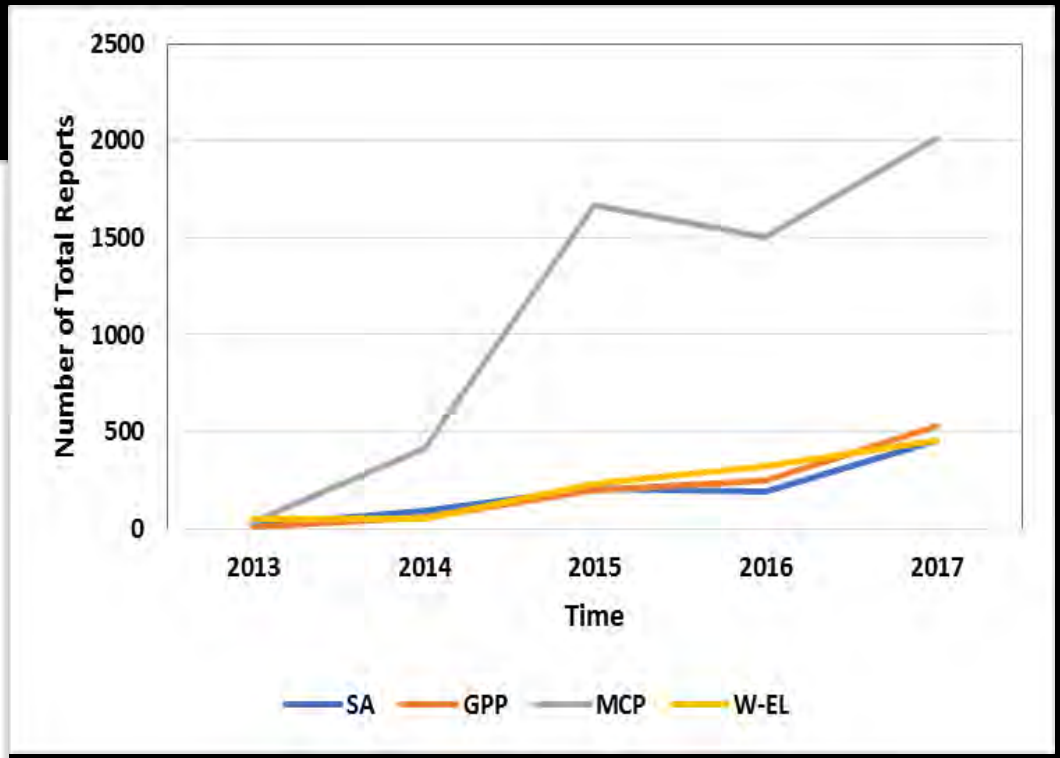




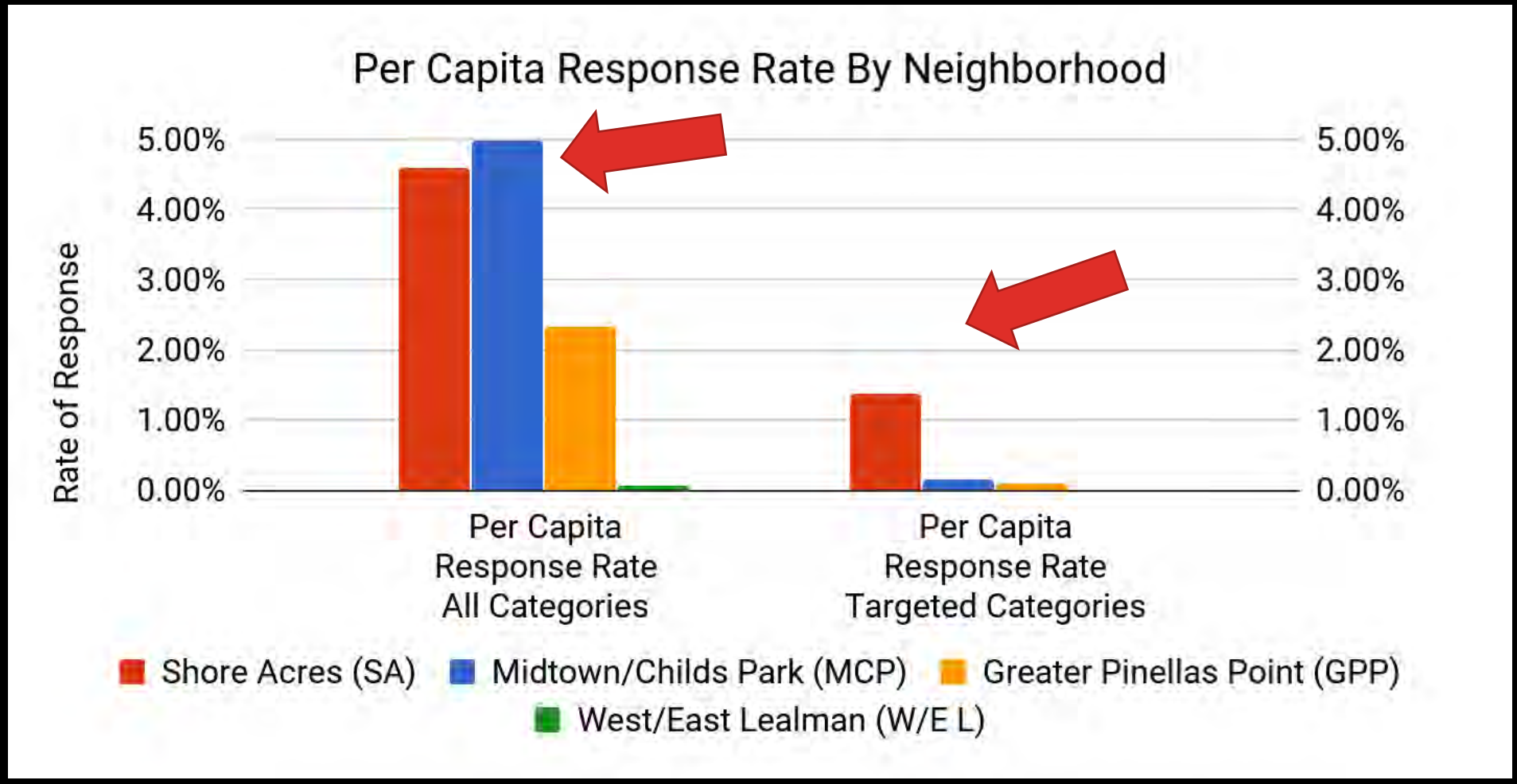


REPORTING TRENDS OVER TIME (TARGETED AND ALL)

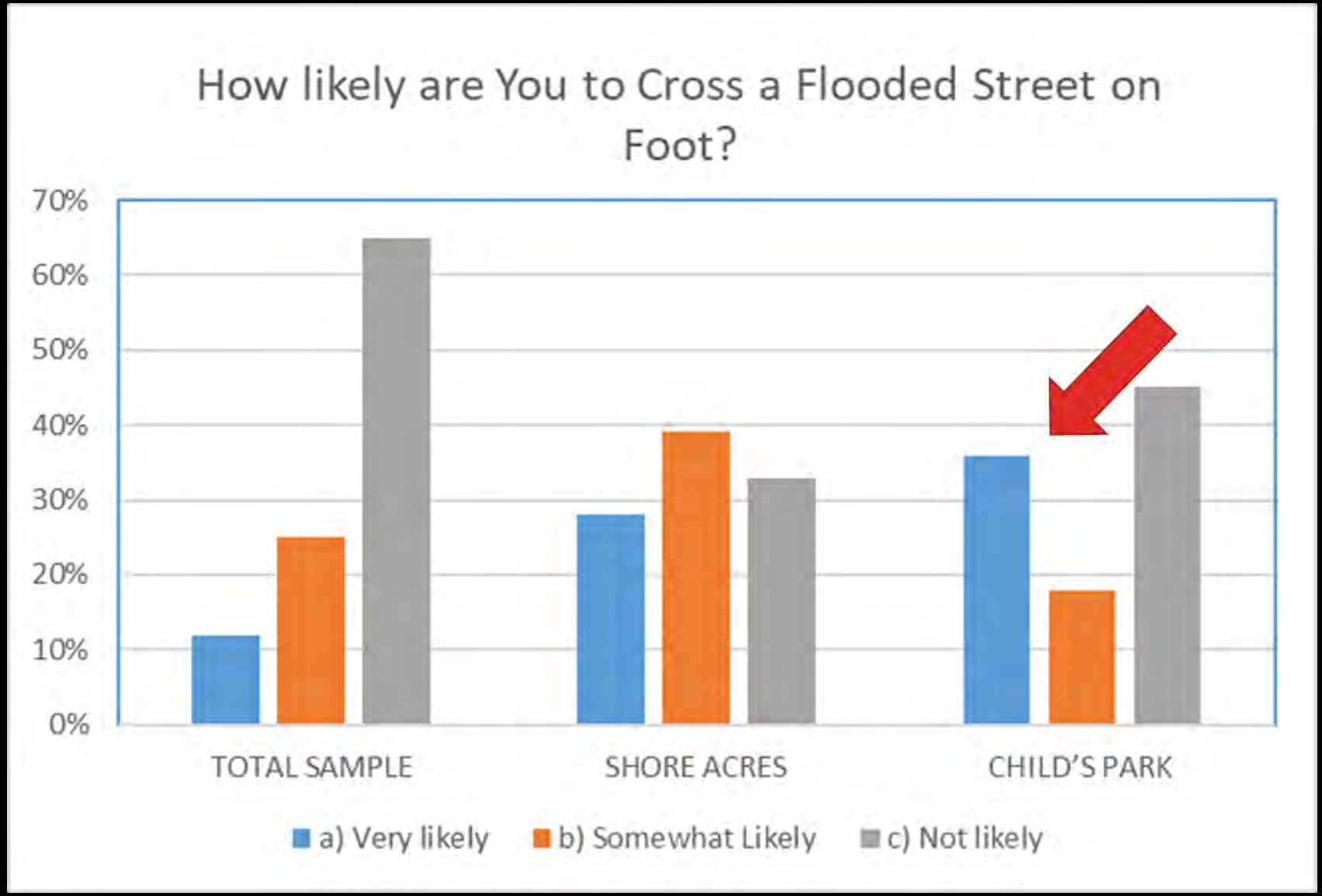




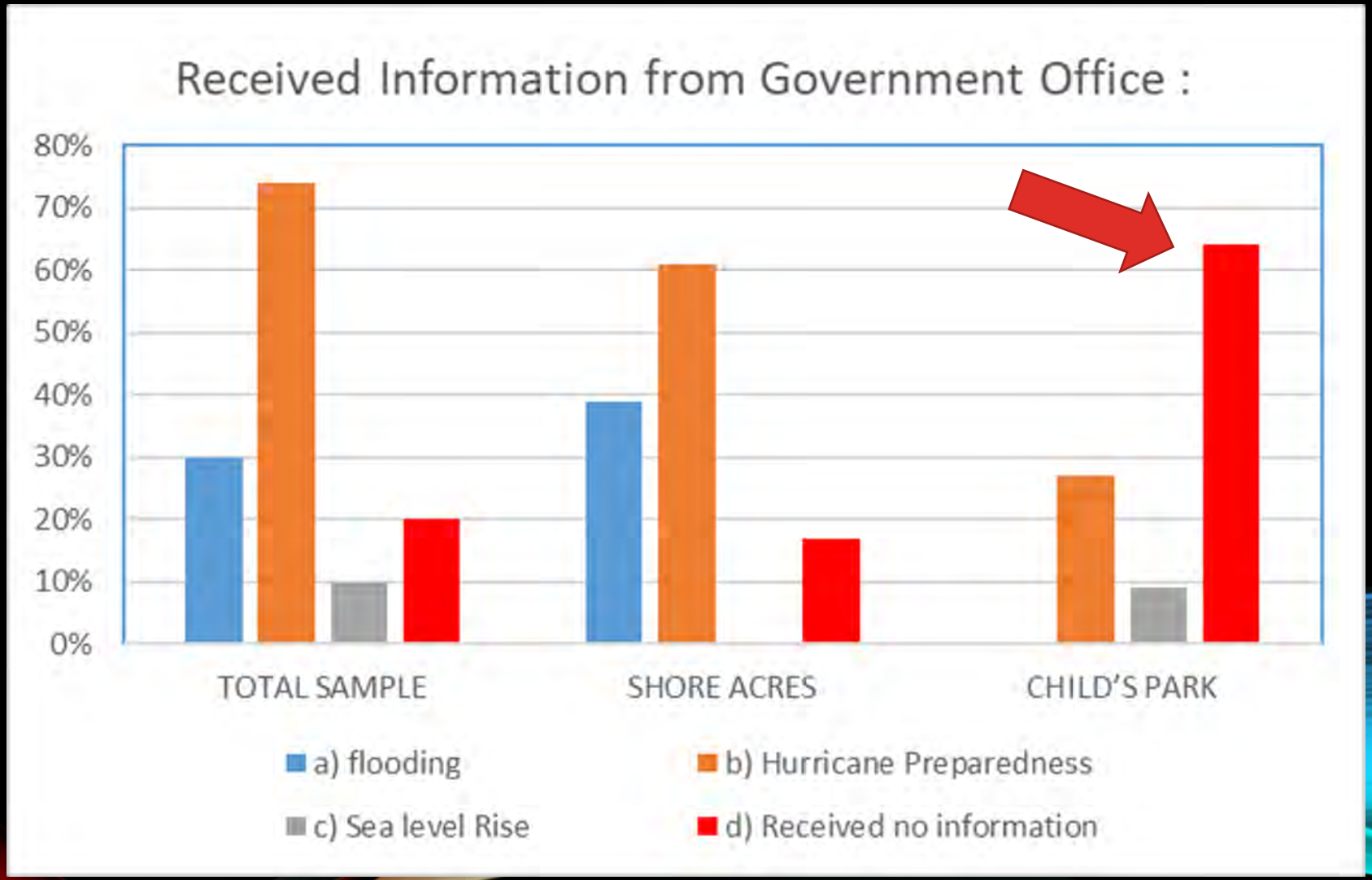
FLOOD RELATED CROWD-SOURCED DATA

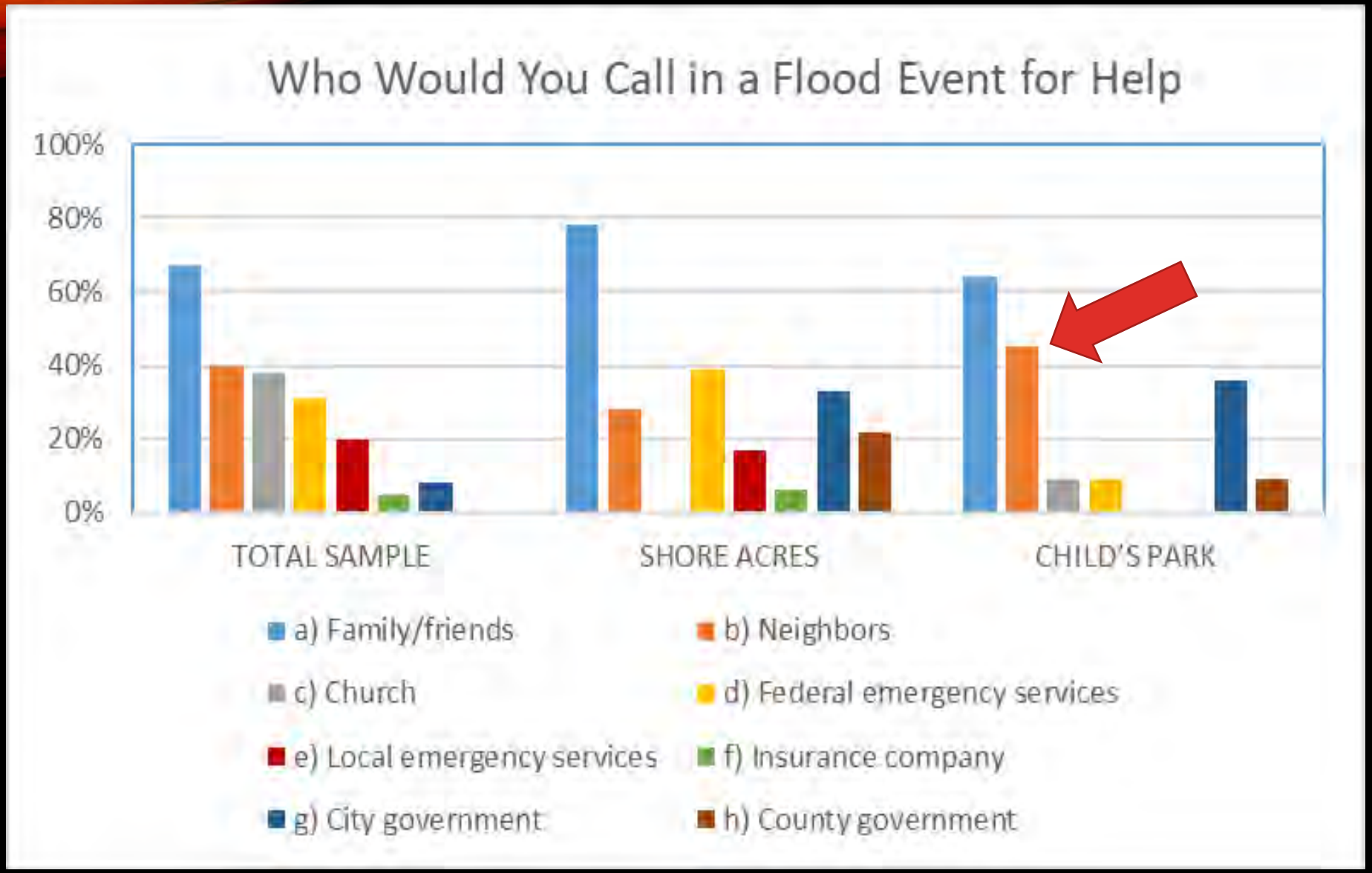


FLOOD AND HEALTH



COMMUNICATION



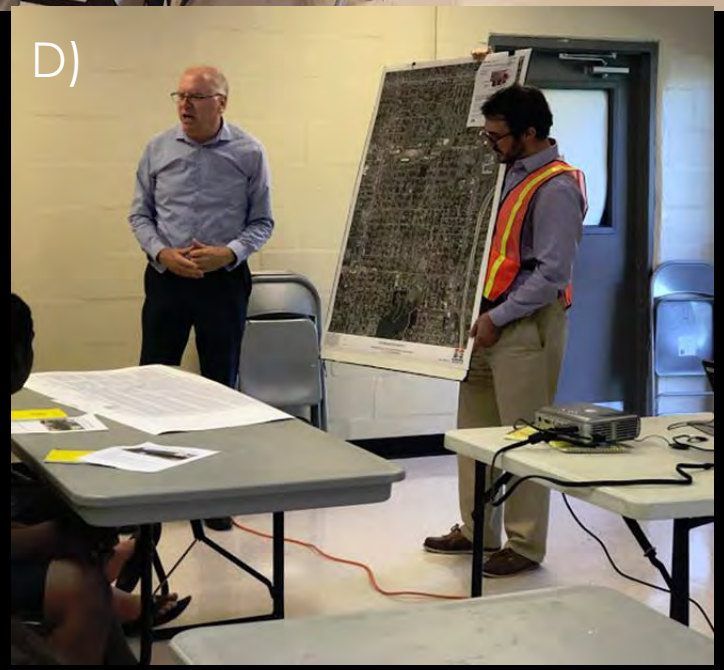

Who Would You Call in a Flood Event for Help
100%
80%
60%
40%
20%
0%
TOTAL SAMPLE
SHORE ACRES
CHILD'S PARK
a) Family/friends
b) Neighbors
c) Church
d) Federal emergency services
e) Local emergency services
f) Insurance company
g) City government
h) County government

SUMMARY OF FINDINGS

- Standard ways of dispersing information are not reaching socio-economically vulnerable communities
- The results of this study show that crowd-sourced data such as SeeClickFix, when mined and mapped
  - Could be used by local officials to identify recurring problems,
  - Make effective decisions about resource allocation,
  - Foster Transparency
- The steady increase of crowed-sourced reports over the study period suggests
  - that crowdsourcing platforms facilitate citizen participation in governance from marginalized communities
  - has the potential to help local officials determine what type of vulnerabilities and resource allocation needs exist in diverse communities.

FIELD VALIDATED PROBLEM SITES

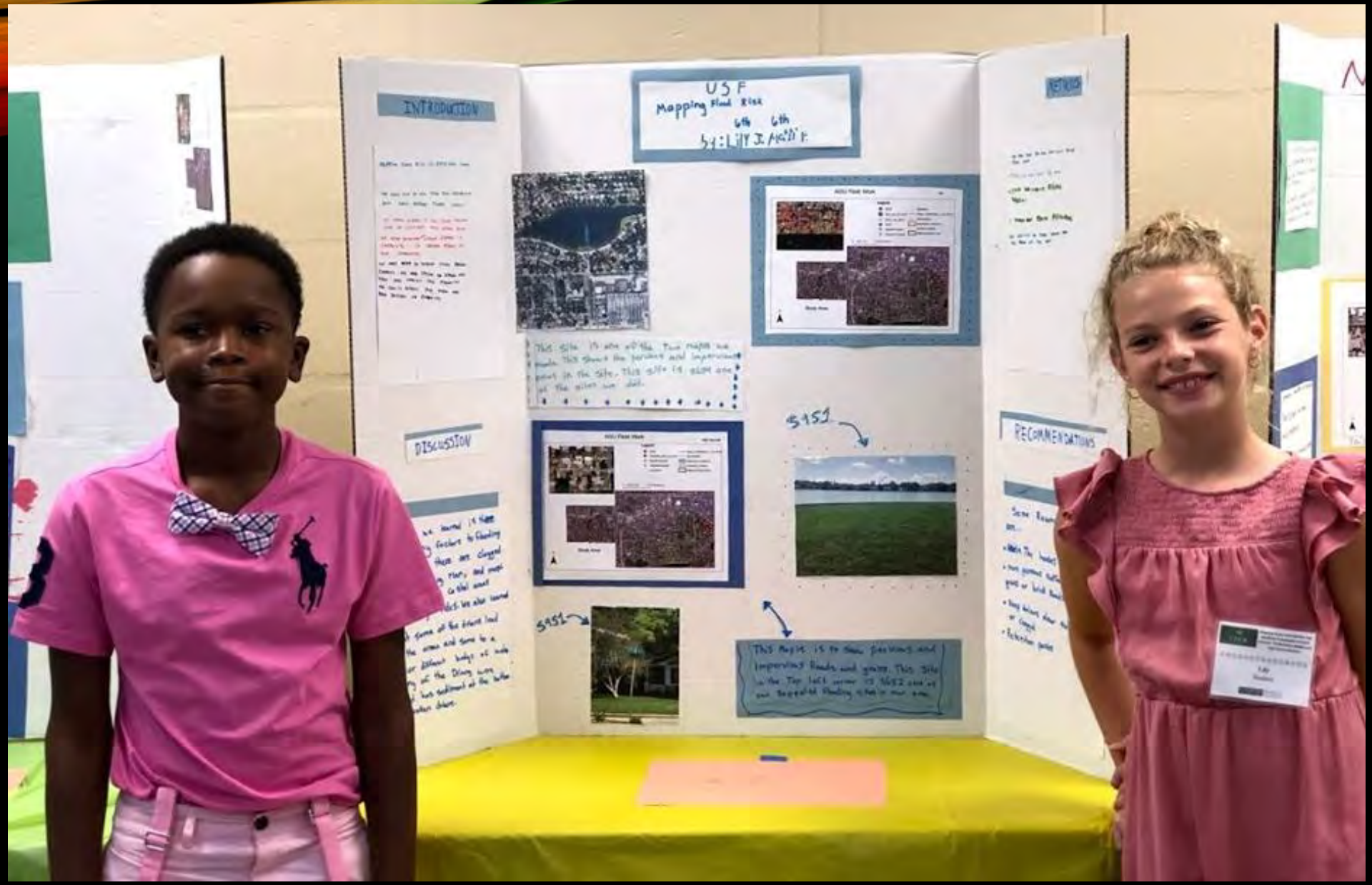
Middle and High School STEM project to learn about flooding and climate change



(A) Dr. Johns explaining Fieldwork plan , B) Dr. Dixon Explaining Core concepts, C,D& E) Learning from City officials (Storm Water and Environmental Engineering) Photo: A by Crystal Mcclendon, B,C,D & E by Christine Joyner


16 AV S

Stop 2, Site 1



Middle School Best Poster

High School Best Poster

OVERALL SUMMARY OF KEY FINDINGS

- Socio-economically vulnerable neighborhoods lack sufficient knowledge and resources to adequately prepare for and react to climate-related challenges, including large storm events, flooding, and rising heat.
- Major concerns and access to resources/information vary between communities based on their socio-economic characteristics and biophysical vulnerabilities;
- Customized information and targeted resources are needed to foster preparedness, adaptation and resiliency;
- Social capital plays a greater role in resiliency for marginalized communities than for affluent communities;
- Analysis of crowd-sourced data may increase participation in governance even in marginalized communities where the digital divide still exists.

LOOKING AHEAD

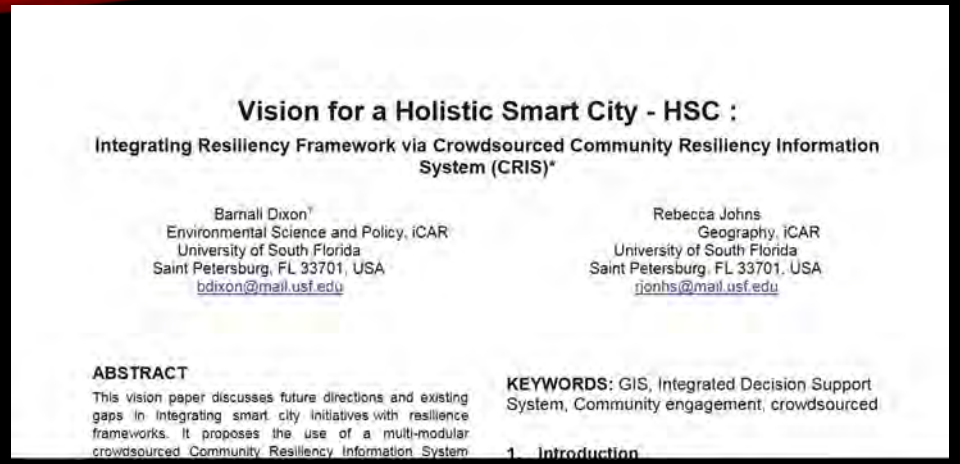
- **CRIS – Community Resiliency Information System**
- **Role of personal network and resiliency after disasters**

CRIS - LOOKING AHEAD

- **CRIS – Community Resiliency Information System**

- To complement a smart city and make it a holistic smart city (HSM) in the context of resiliency (HSM-CRIS)
- HSM-CRIS will be based on enhanced understanding of each community's specific needs (related to socio-economic & health vulnerabilities, environmental assets and hazards, and levels of social capital at the neighborhood scale)
- Will foster two-way communication between government and communities by creating a grass-roots level, community-based technology enhanced needs assessment and disaster-response information system called CRIS.

CRIS – COMMUNITY RESILIENCY INFORMATION SYSTEM



Vision for a Holistic Smart City - HSC :

Integrating Resiliency Framework via Crowdsourced Community Resiliency Information System (CRIS)*

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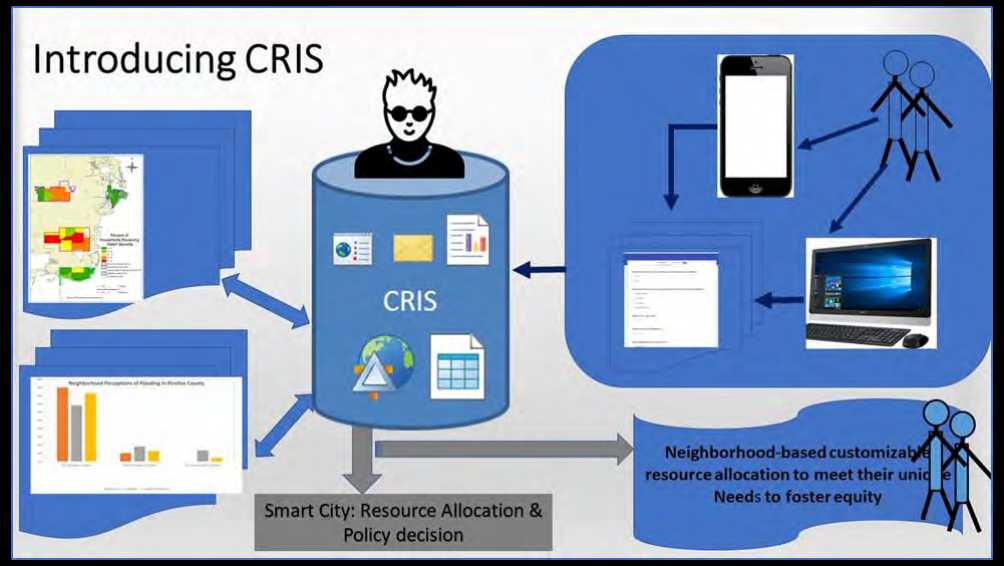
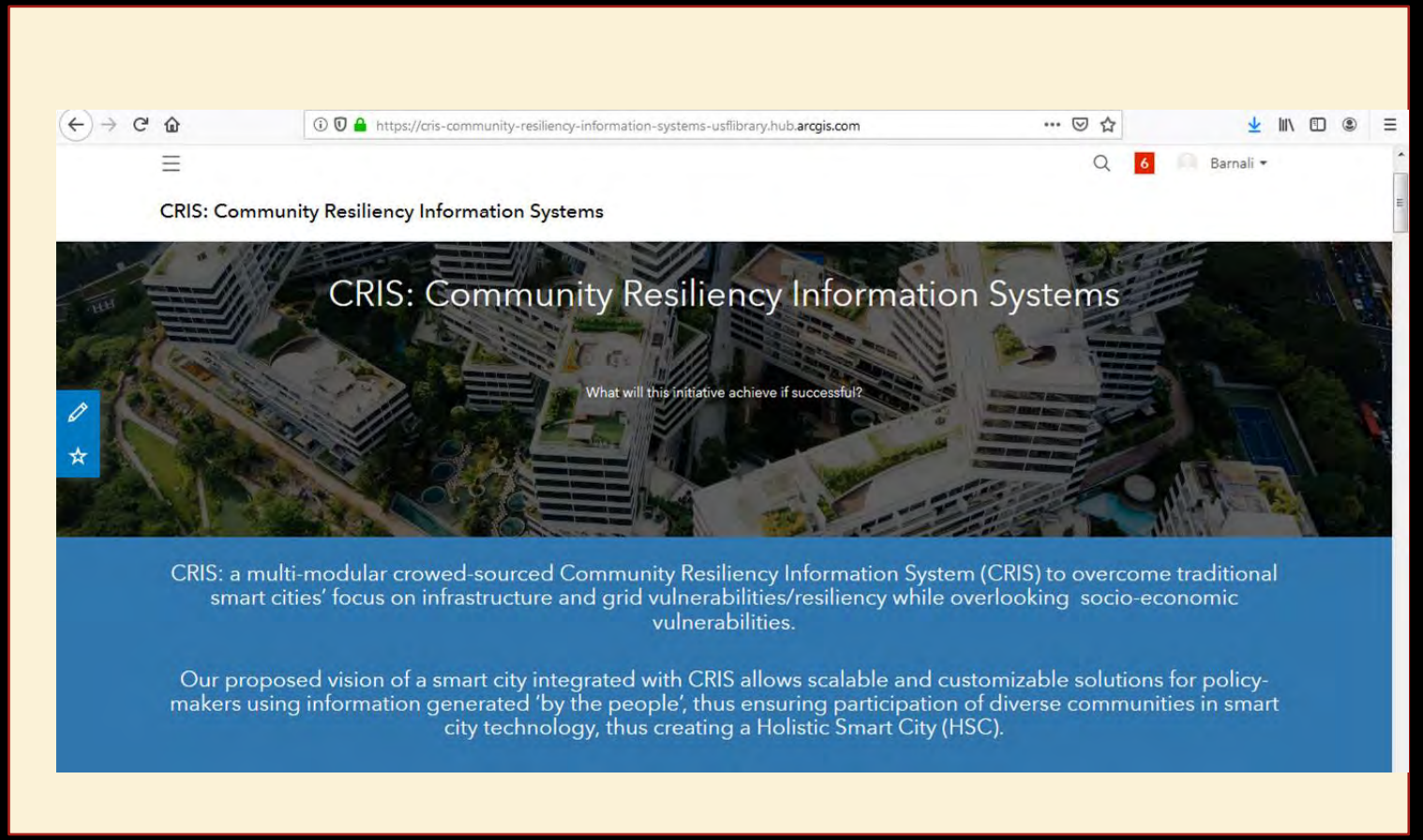
ABSTRACT

This vision paper discusses future directions and existing gaps in integrating smart city initiatives with resilience frameworks. It proposes the use of a multi-modular crowdsourced Community Resiliency Information System

KEYWORDS: GIS, Integrated Decision Support System, Community engagement, crowdsourced

1. Introduction

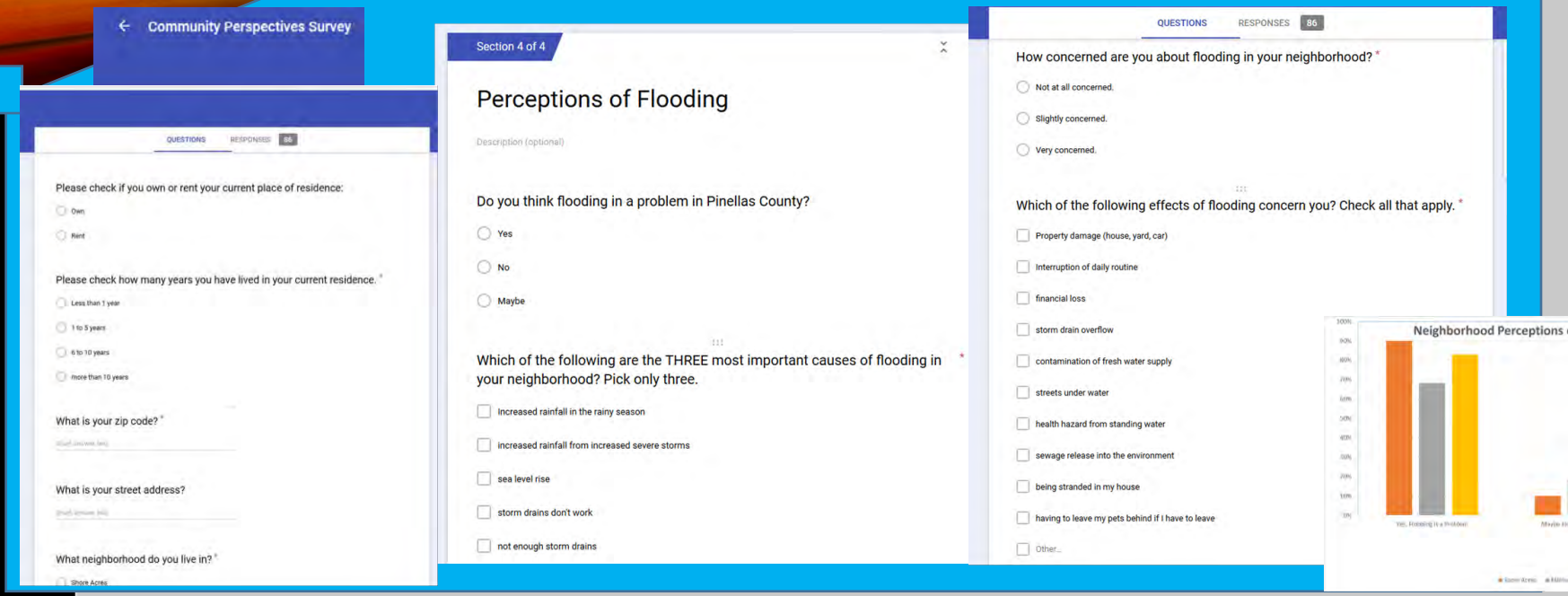


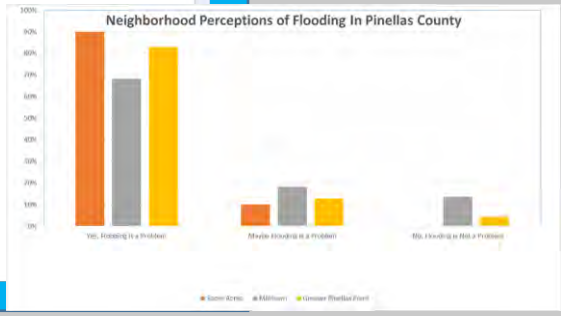


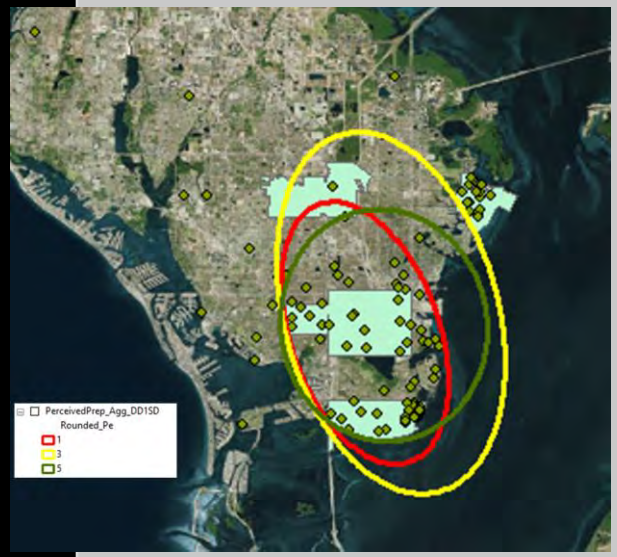
SURVEYS

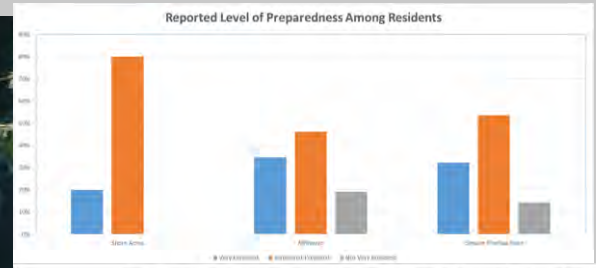
CRIS

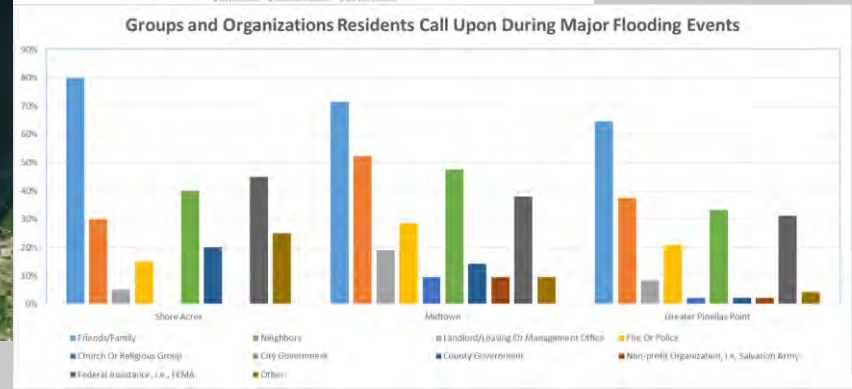
Web-based multi-modular digital hub: Mapping, Info Gathering & Dissemination System Customizable and scalable







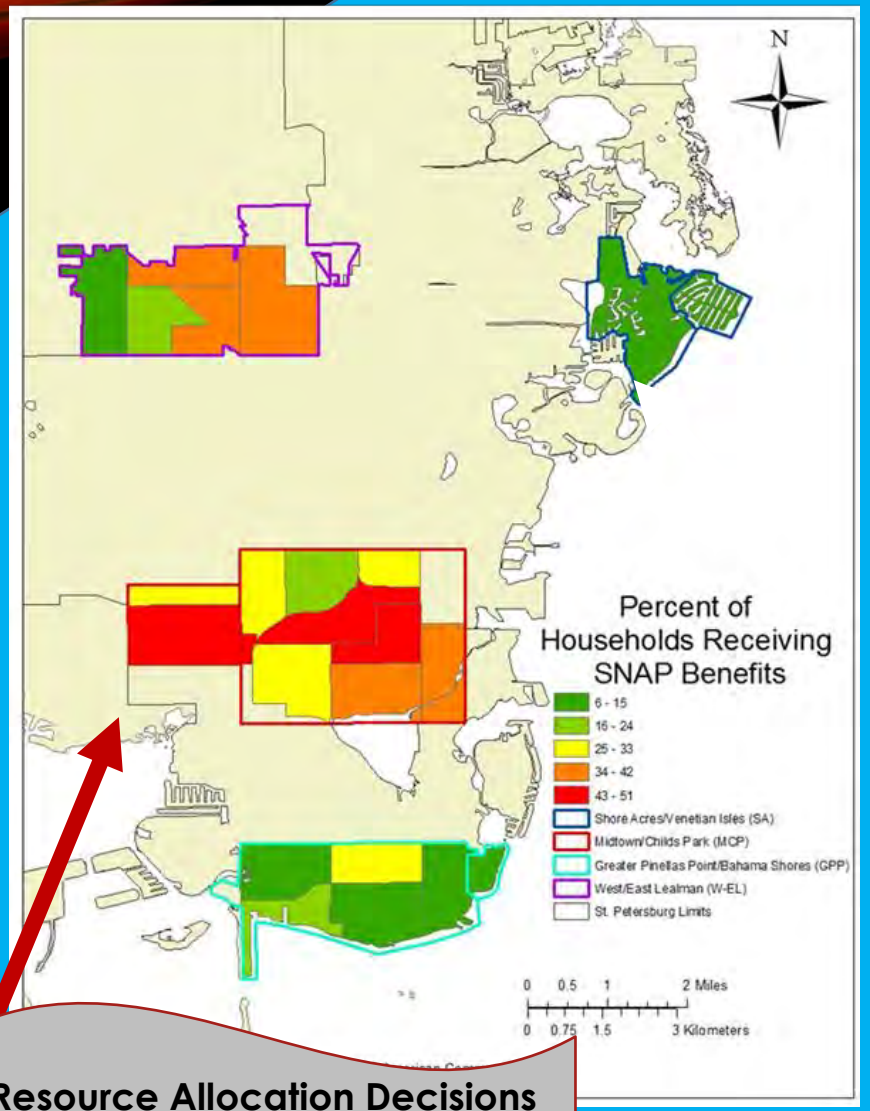




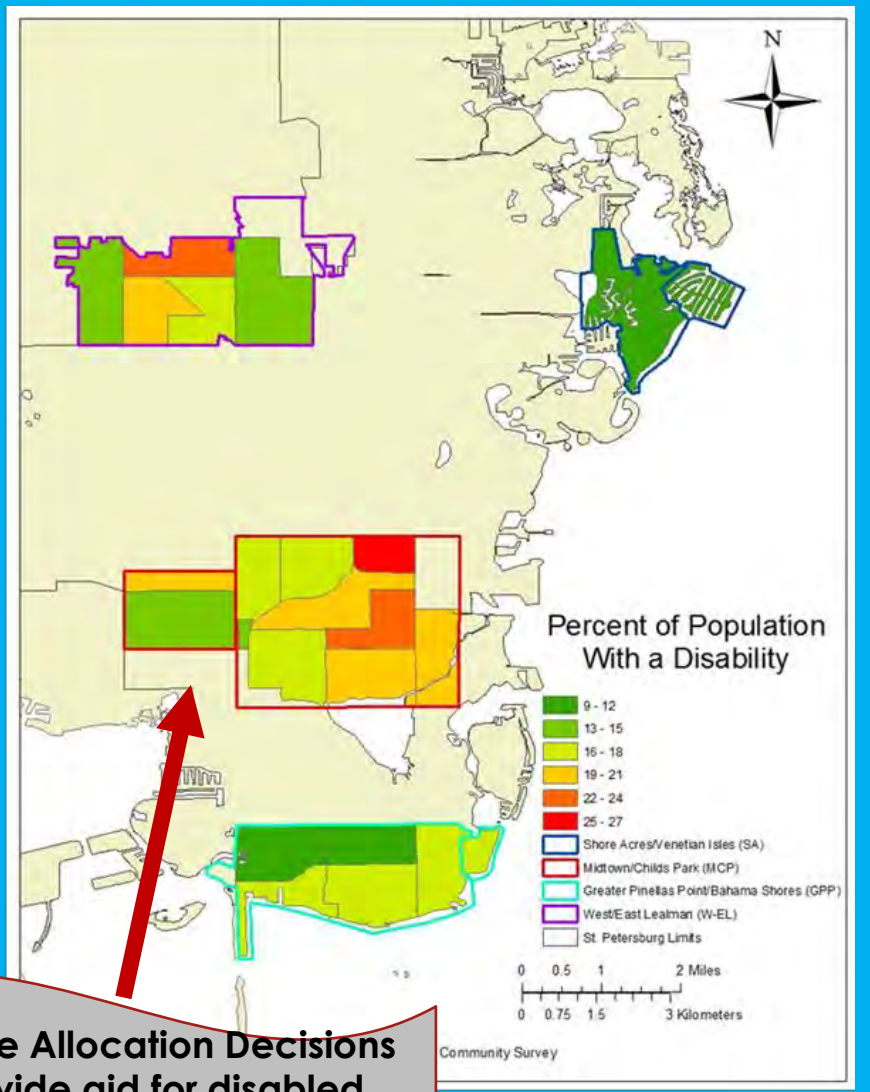
SOCIOECONOMIC VULNERABILITY

CHRIS

Web-based multi-modular digital hub: Mapping, Info Gathering & Dissemination System Customizable and scalable



Resource Allocation Decisions
SNAP service when no power needed for MCP but not SA

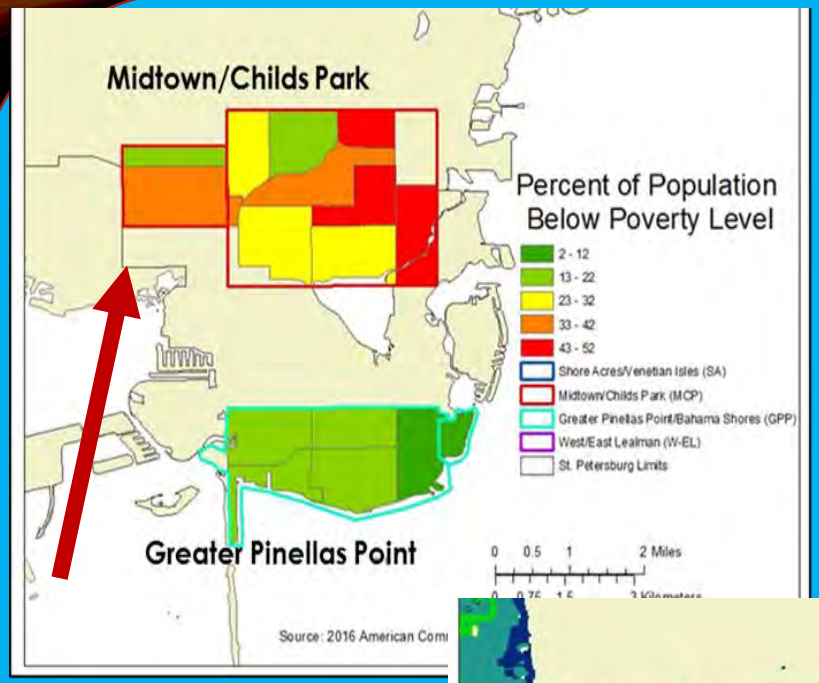


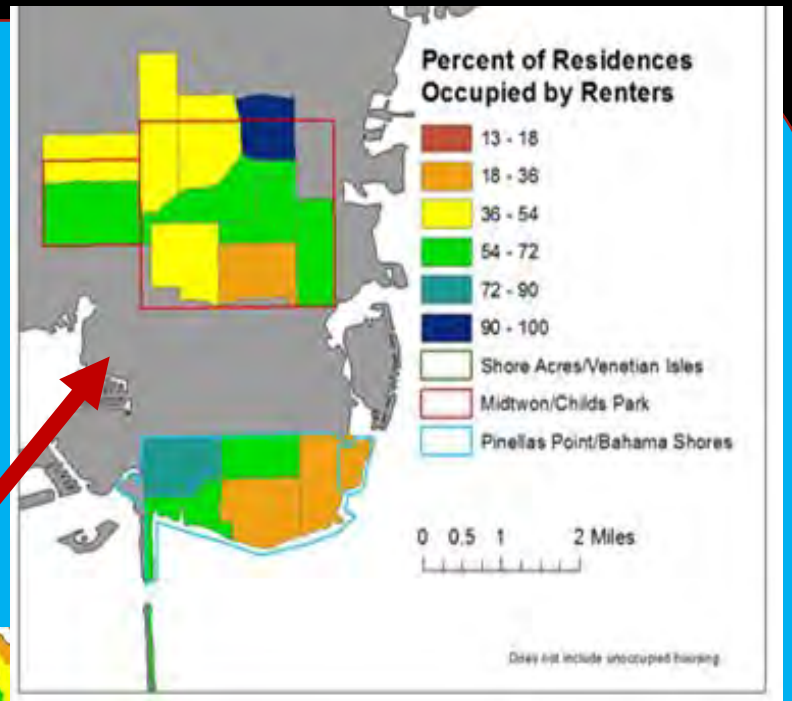
Resource Allocation Decisions
To provide aid for disabled residents: needed for MCP but not SA

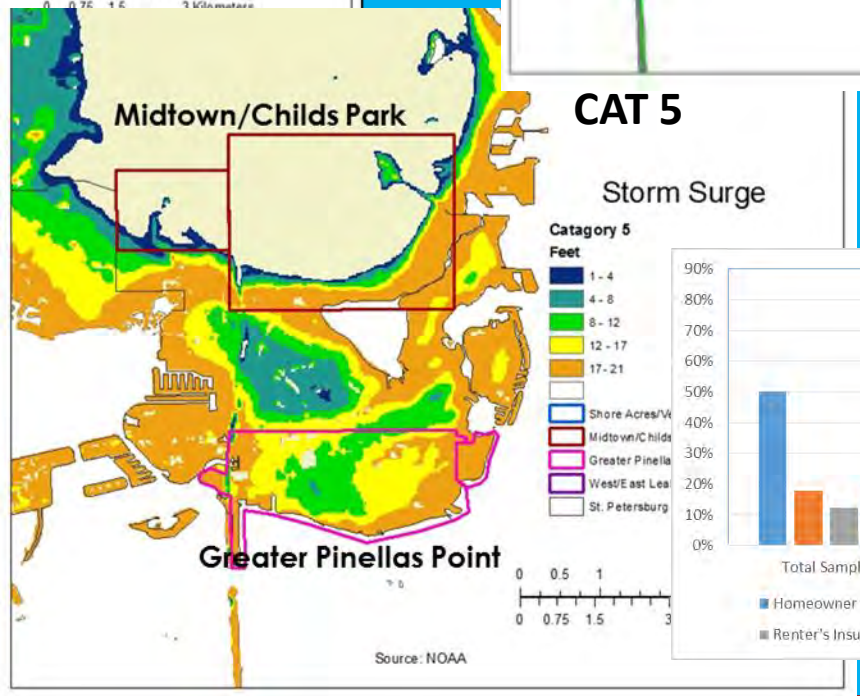
HURRICANE RELATED STORM SURGE

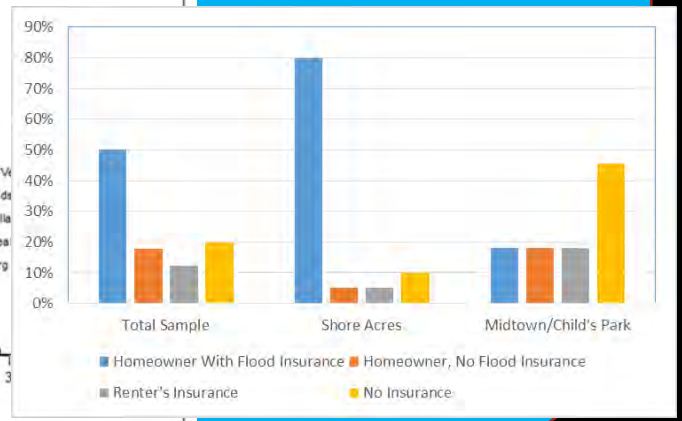
CRIS

Web-based multi-modular digital hub: Mapping, Info Gathering & Dissemination System Customizable and scalable



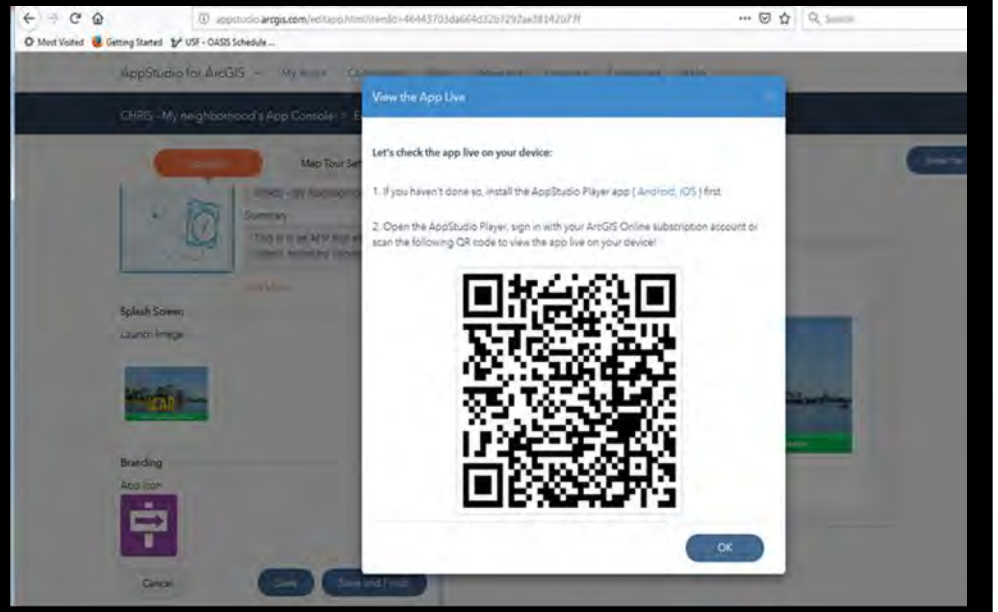






Allocate Resources to help people below poverty and renters without insurance to prepare

GOAL TO FOSTER COMMUNICATION & ENGAGEMENT



PERSONAL NETWORK AND RESILIENCY: LOOKING AHEAD

- **Role of personal network and resiliency after disasters**
- **Personal Network as a Resource of Resilience for Individual and Community: Comparative Study among victims of disaster (Japan* and Florida)**
  - **Mixed method among displaced population**
  - **Integrated GIS analysis**
  - **Data mining from social network platform (twitter, facebook, nextdoor)**

- Collaborators:
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- IDMC – Internal Displacement Monitoring Center

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THANK YOU

- Questions

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We are Always looking for funding, sponsorships and collaborators – if interested please contact us

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