GEORGIA SMART

Enabling Resiliency and Sustainability through
Academic Research and Public Sector Collaboration

Macon-Bibb County

2019-2020 Class

Final Report

September 24, 2020

Social Media Tag
#GeorgiaSmart

Georgia Tech

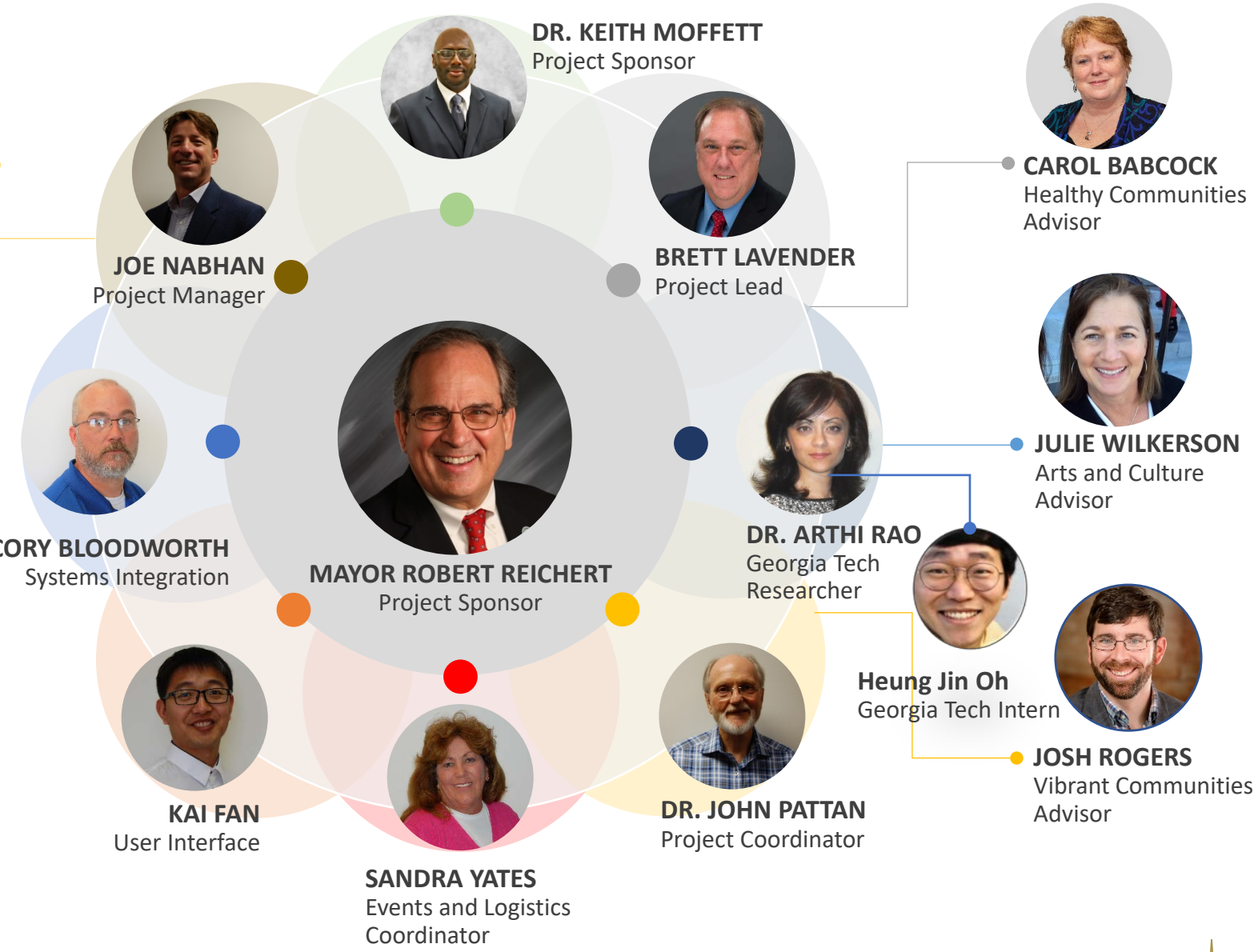
Project Team

Smart Neighborhoods MBC Project Team

SMARTER TOGETHER ADVISORY BOARD

Macon-Bibb County Government's Smarter Together Advisory Board helps steer Smart City policy and initiatives in our community.

Coordinated by County Manager Keith Moffett, the group comprises of representatives from local government, education, health care, charitable organizations, economic development, conservation, arts and culture, public safety, tourism, public utilities and public transportation organizations in our area.



- **One in three Macon-Bibb County households have no access to broadband internet.**

- **One in five households have no access to a computer or smart device.**

-US Census Bureau analysis covering 2013-2017

How can neighborhoods that wish to participate in community-improvement projects do so without access to the information and services that support them?

Project Motivation and Goals

- Smart Solutions- existing mobile applications and browser-based solutions with growing demand
  - 311 application (See, Click, Fix)
  - Open Data portal geohub (MaconInsights)
  - Online employment applicant system (Neogov)

Many of our Smartest Solutions are still out of reach for our economically disadvantaged neighbors who do not have access to highspeed internet or devices!

Smart Neighborhoods MBC

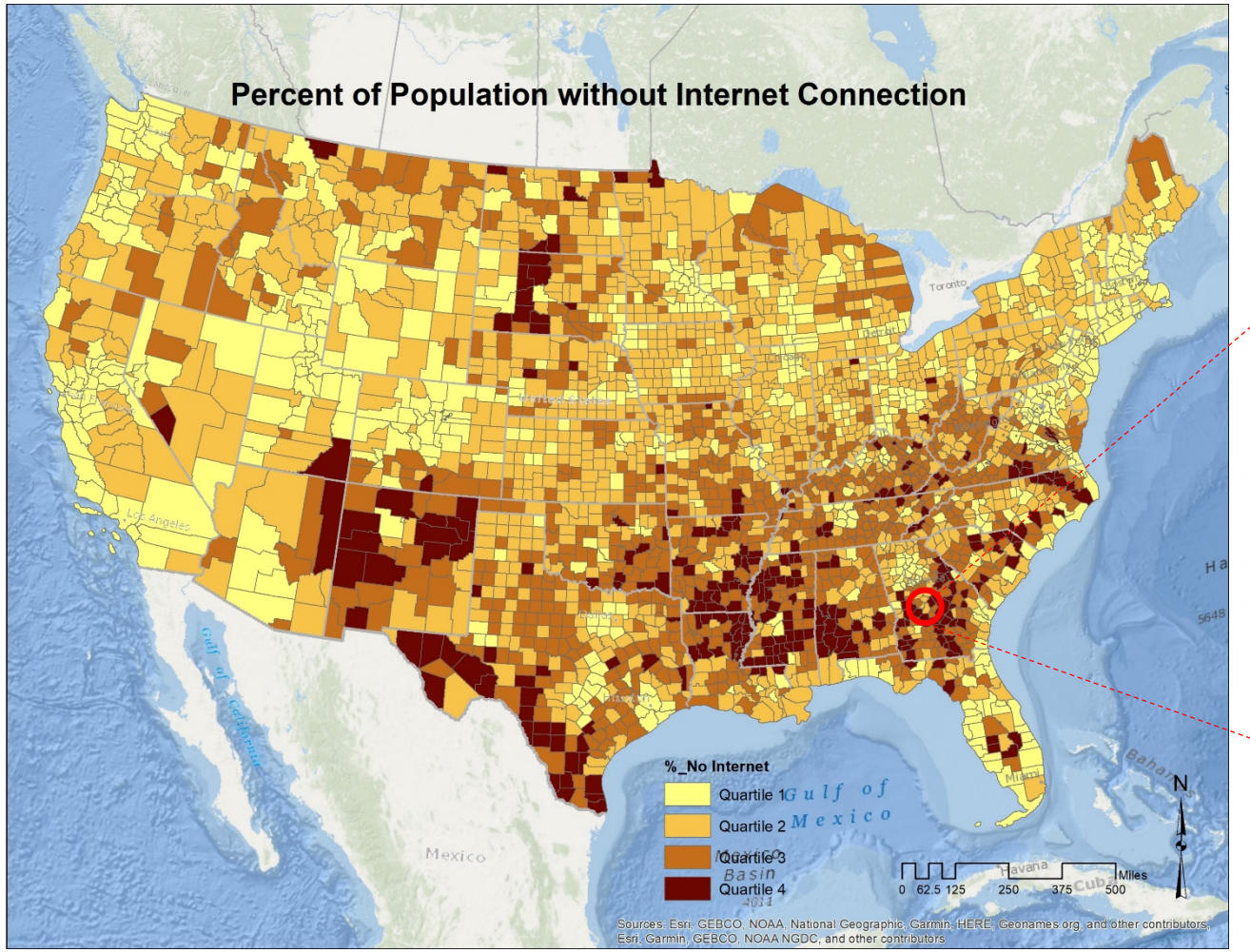
Smart Address MBC

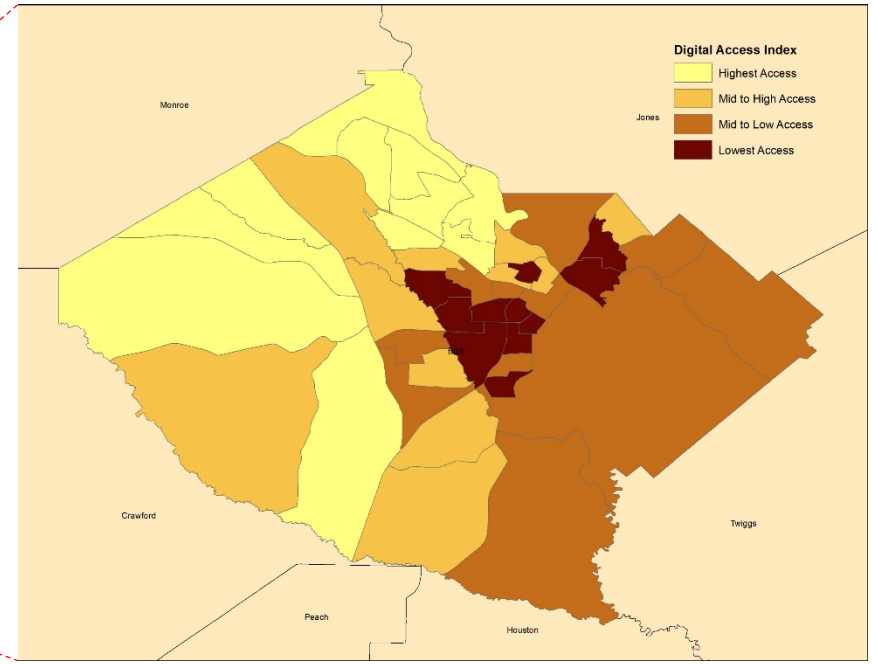
WiFi Macon

Cleaner Together MBC

Georgia Tech

Project Motivation and Goals





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Project Overview

SmartNeighborhoodsMBC brings City Hall to Neighborhoods

SmartNeighborhoodsMBC promotes equity in our economically stressed neighborhoods by placing **Smart Kiosks** in strategic locations. These kiosks are envisioned as huge smartphones that will provide access to critical information and services, to promote community empowerment in underserved areas.

Project & Research Objectives: Planning (Phase I)

1. **Stakeholder Engagement**
   - Determine community priorities for information delivery
   - Determine community priorities for kiosk features
   - Establish community partnerships for project implementation
2. **Identify vulnerable neighborhoods & potential kiosk locations**
3. **Research technology options and identify feasible options**
4. **Develop prototype apps based on community priorities**
5. **Establish analytical strategies for community equity**

Project Milestones

2017- Ongoing
- Macon Insights
- Macon Insights Data Academy
- Smart Address MBC

September 2020:
- Project kickoff

October 2020:
- GIS based community survey launched online
- Smart MBC website created
- Smart City Advisory Team launched
- Risk Index map created

November 2020:
- Kiosk manufacturers contacted
- Knight Foundation grant application

January 2020:
- On-site visit planning (brochures, presentation, stakeholder survey, GIS storymap)

Feb 2020:
- Kiosk models identified
- On-site event
- GSCC intern candidates interviewed

March 2020:
- Mid-year review

May 2020:

Paper survey deployed

Summer 2020:
- Intern onboarding
- Analysis of survey responses
- Literature review to develop evaluation plan
- Literature review of digital equity plans
- MOU signed by Macon-Bibb city administration for kiosk acquisition and deployment

August 2020 - Ongoing:

Development of COVID app

Prototype kiosk acquisition

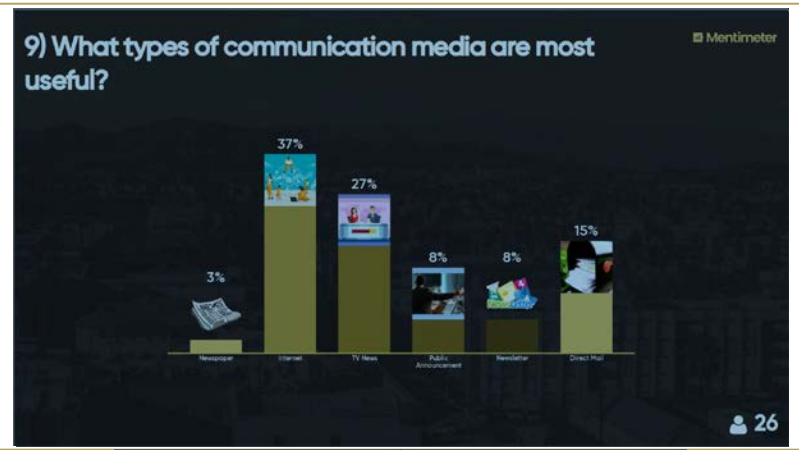
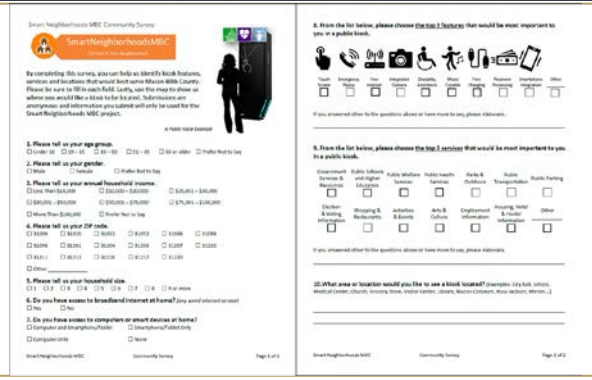
Project Actions & Results

Primary Research Questions

Our research questions were closely integrated with project objectives and actions

- What are optimal kiosk locations?
- What kinds of features should the kiosks have?
- What kinds of apps should the kiosks have?
- What metrics should we use to evaluate the effectiveness of kiosks?
- What can Macon-Bibb learn from digital equity strategies across the country?

1. Stakeholder Engagement

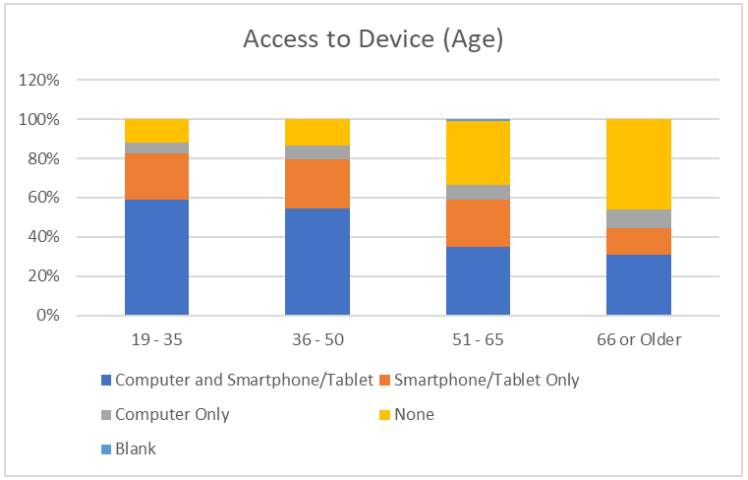
Objectives	Actions	Results
Determine community priorities for information delivery	Stakeholder survey at on-site event	
Determine community priorities for kiosk features and services	Online and paper survey	
Establish community partnerships for project implementation		

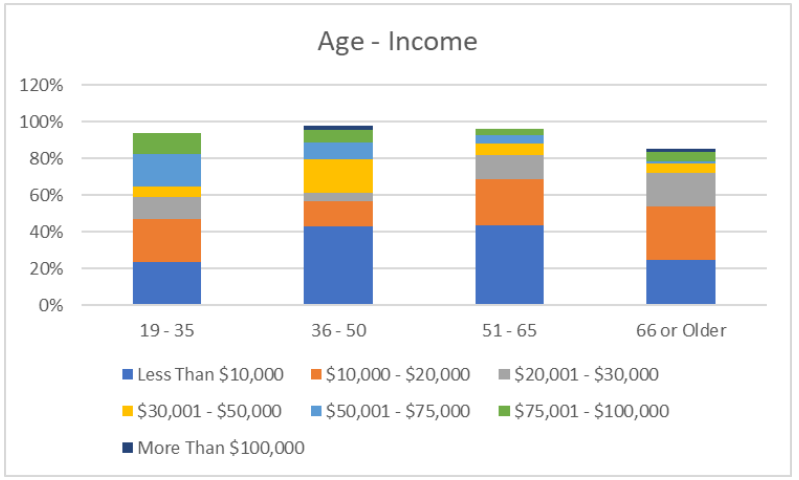
2. Identify Vulnerable Neighborhoods

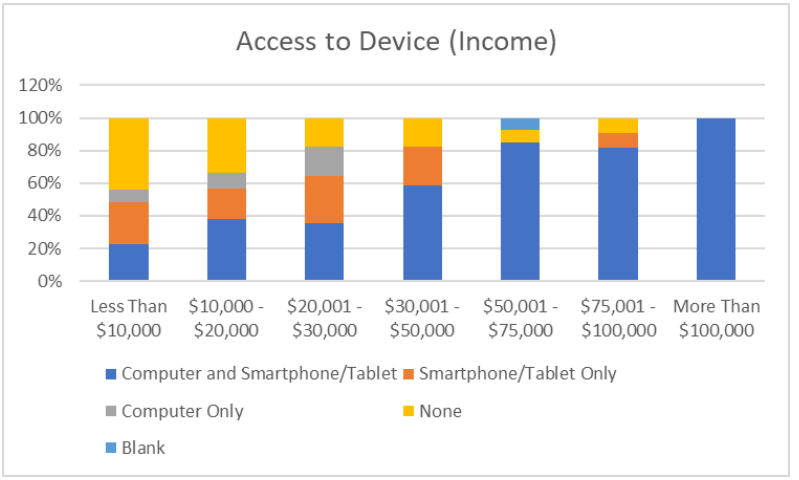
- Online survey received a poor response rate
- Paper surveys completed at a food drive after COVID shelter-in-place
  - Assistance of advisory committee member
  - Simplify survey format
- 215 Complete survey responses
- Grocery stores, Churches and Medical Facilities emerged as the most popular places for kiosk locations

Access to Broadband

Age Range	No	Yes	Total
19 - 35	4	13	17
36 - 50	**16**	**28**	**44**
51 - 65	**45**	**38**	**83**
66 or Older	**39**	**22**	**61**
Blank	2		2
Prefer Not to Say	2	1	3
Under 18	1	2	3

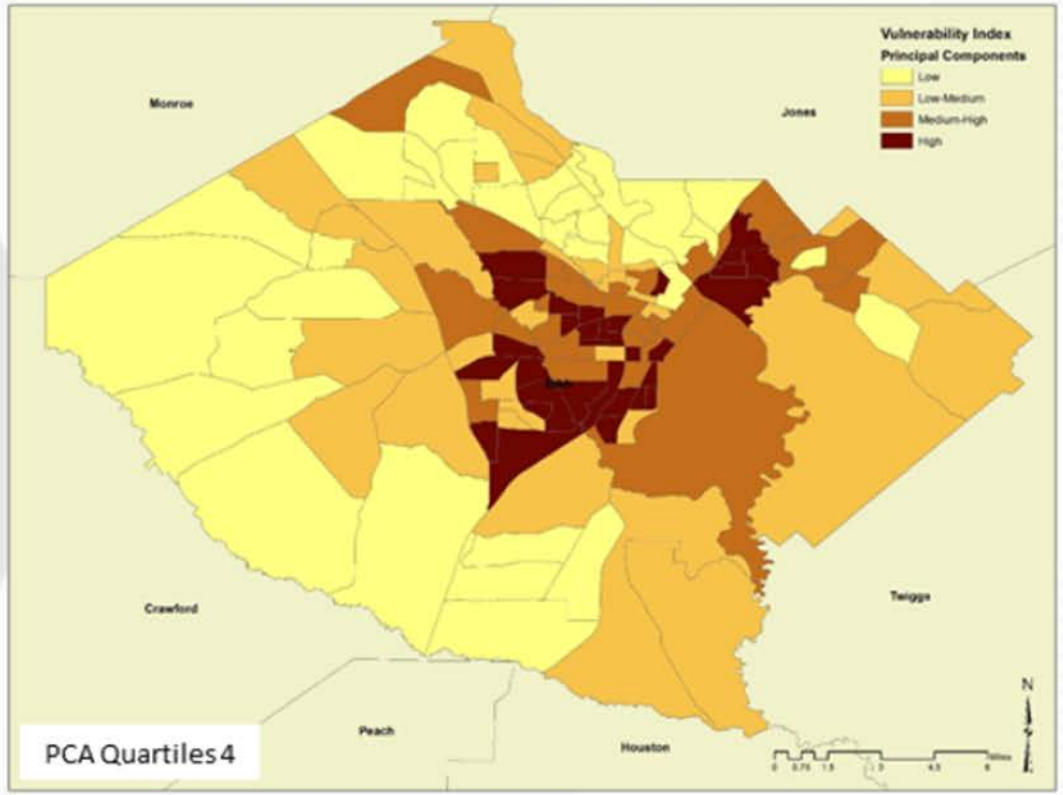


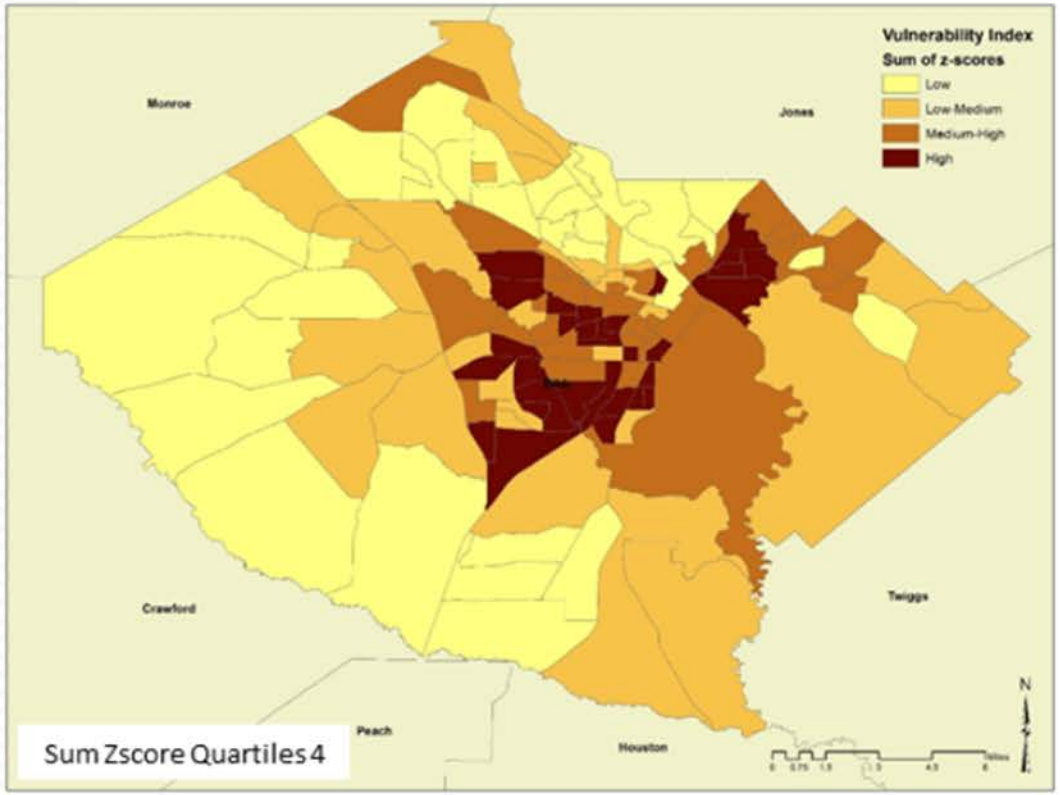




2. Identify Vulnerable Neighborhoods

LOCATION INTELLIGENCE: DEVELOPING THE SMART LOCATION INDEX

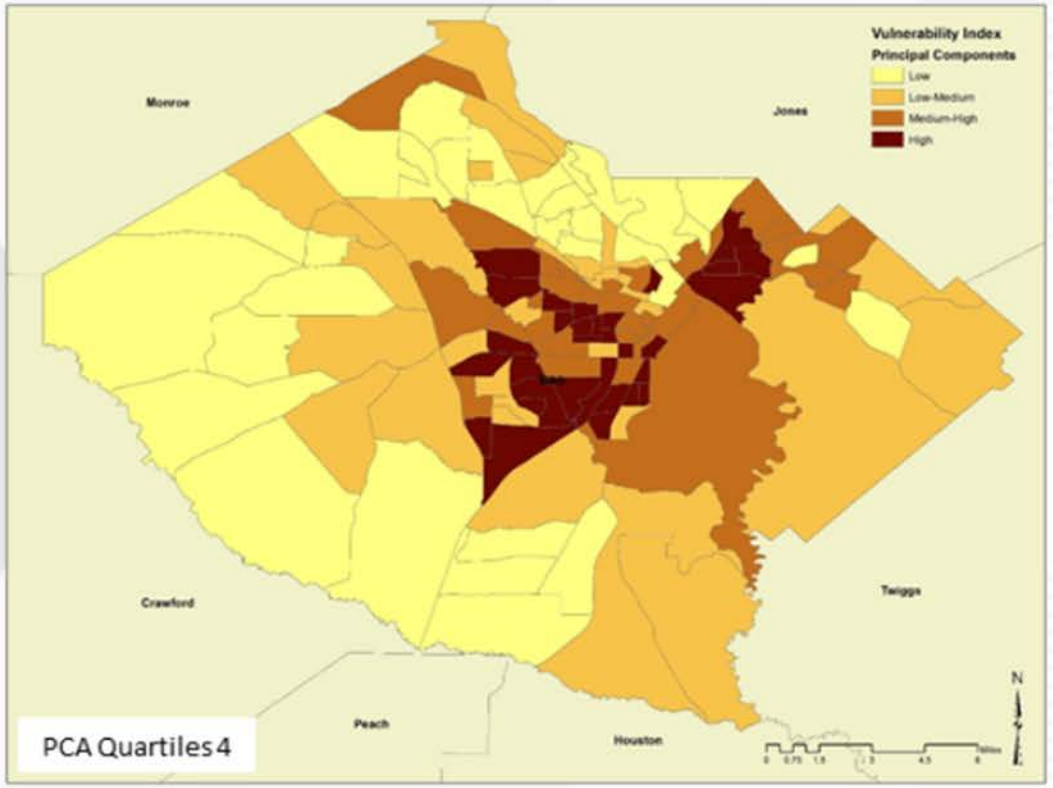




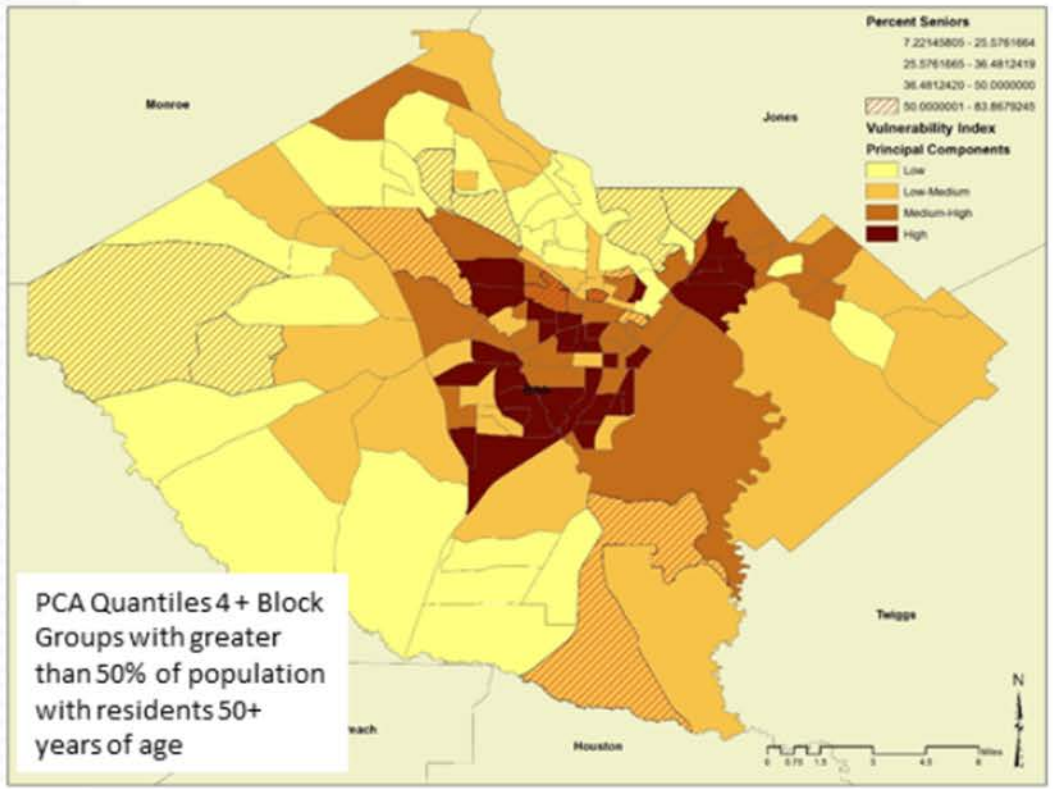
The first step was to develop a data-driven index to quantitatively assess where our vulnerable communities our and visualize their geographic distribution. We based our index on well-known indicators of vulnerability such as income, education and poverty. We used two statistical methods routinely used in the research literature and compared results (fairly identical). We picked the index using Principal Components Analysis (PCA; based on consultation with MBC IT). The slides above show the index visualized as quartiles to make it comparable.

2. Identify Vulnerable Neighborhoods

LOCATION INTELLIGENCE: DEVELOPING THE SMART LOCATION INDEX



PCA Quartiles 4



PCA Quantiles 4 + Block Groups with greater than 50% of population with residents 50+ years of age

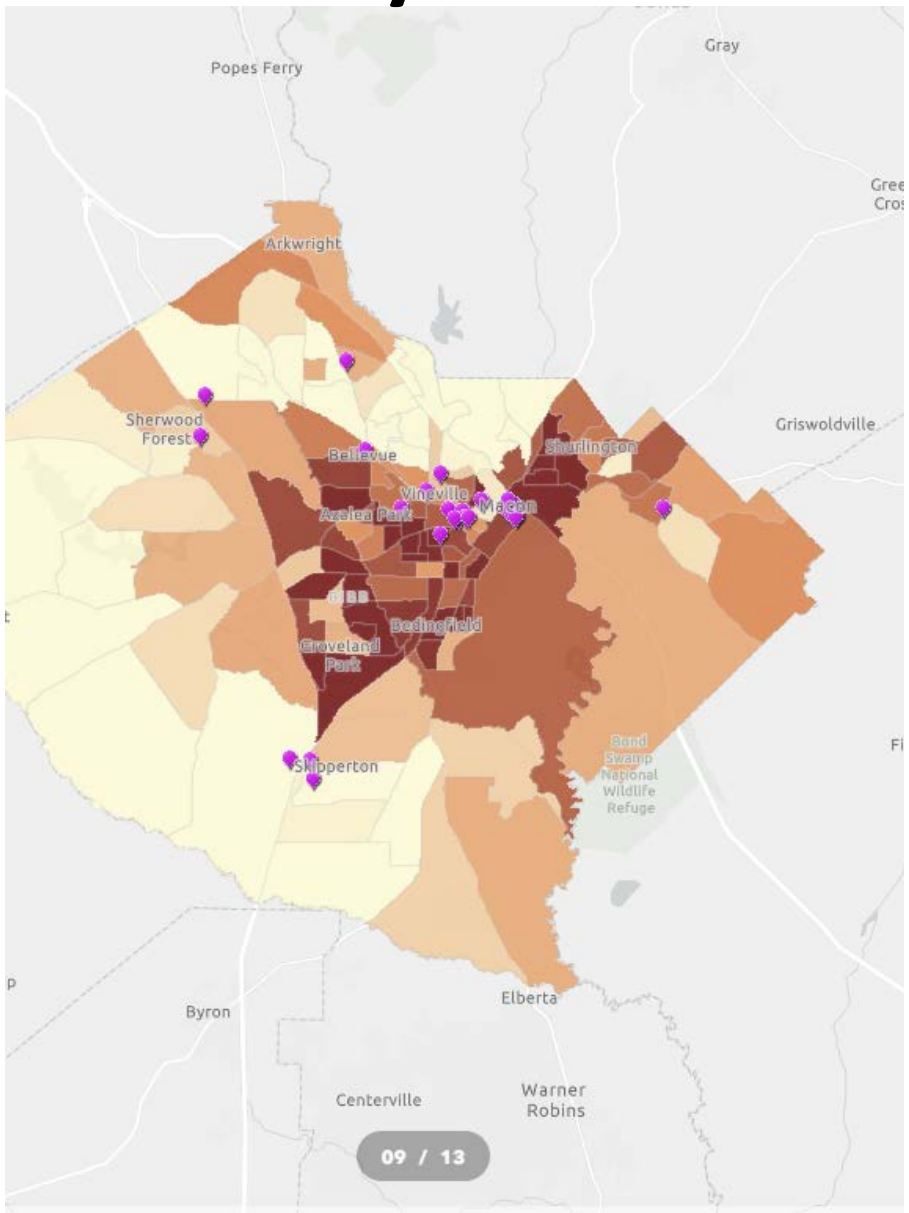
The next step was to take the general index and add layers that might point us to other types of demographic groups that are also vulnerable. Here we show socioeconomic vulnerability overlaid with communities that have a sizeable aging population who are also at risk for social isolation and reduced mobility. We defined these neighborhoods as block groups with 50% of the population with individuals over 50 years of age.

Statistical analysis and surveys of our communities

We used the ESRI Geo Form application to design a survey that asks the questions regarding:

- Demographic information
- Key features that would be desirable in a kiosk
- Key information services that would be desirable in a kiosk
- Where respondents would like to see a kiosk installed

2. Identify Potential Kiosk Locations



2

Corner of First Street and Poplar Street

Coordinates: 32-50-11.00N, 83-37-53.84W

What's Nearby: Macon-Bibb County Government Center, Restaurants and Bars, Brewery, Macon Arts Alliance Office, Residential (Loft Apartments), WiFi Macon

Foot Traffic: Moderate - High

Comment: This location sees moderate to high levels of evening foot traffic do to it being between parking areas and a popular restaurant/bar. This intersection is often host to the stage area during music festivals. WiFi Macon is a project of Middle Georgia State University's School of Computing in partnership with Cox Communications and Macon-Bibb County Government to provide free WiFi along Poplar Street from Rosa Parks Square to MLK Blvd.

3

Location 3: Corner of Second Street and Poplar Street

Coordinates: 32-50-07.31N, 83-37-49.05W

What's Nearby: Retail Shopping, Many Restaurants and Bars, Breweries, Coffee Shop, Many Residential (Loft Apartments), Parking, WiFi Macon

Foot Traffic: High – Extremely High

Comment: This area is on the Second Street corridor and has seen major rejuvenation and development over the past five years. Along with nearby Cherry Street it is a hotspot both day and night. Along with much of Poplar and Third Street it hosts the Main Street Christmas Light Extravaganza attracting hundreds of visitors nightly during the holiday seasons.

6

Location 6: Terminal Station

Coordinates: 32-49-57.99N, 83-37-30.90W

What's Nearby: Main Bus Depot. Harriet Tubman Museum, Georgia Sports Hall of Fame, Restaurant/Bar, WMGT News, DMV Office, Mercer Medicine Center, Some Residential (Loft Apartments), Parking

Foot Traffic: Moderate - High

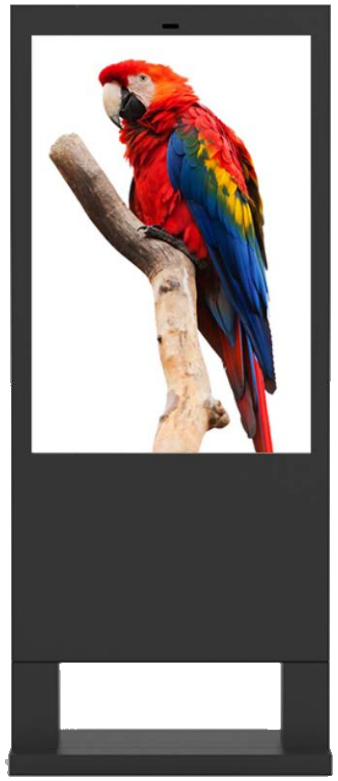
Comment: Terminal Station is the main bus depot for the Macon Transit Authority and Greyhound bus lines. Due to its historic architecture it is often used as a location for filming (most recently Black Widow was filmed there).

3. Research technology options and identify feasible options

Ike Smart City Kiosk

Eflyn Digital Display Kiosk

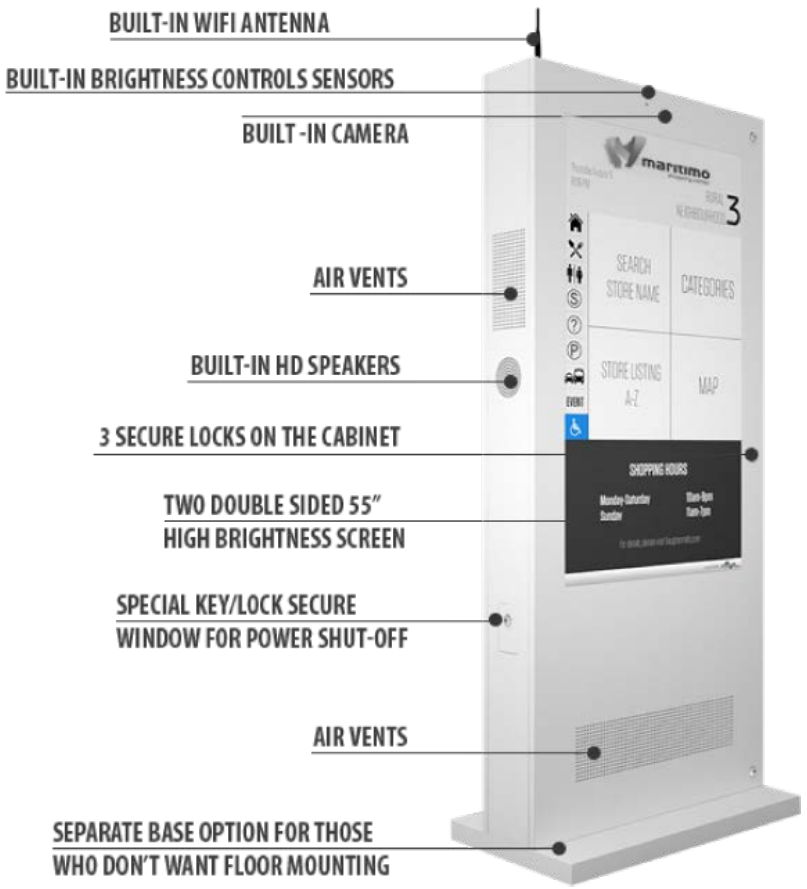
Redyref Media Tower



Resscreen Digital Kiosk

Shenzhen Zhongxin Technology IP65

3. Research technology options and identify feasible options



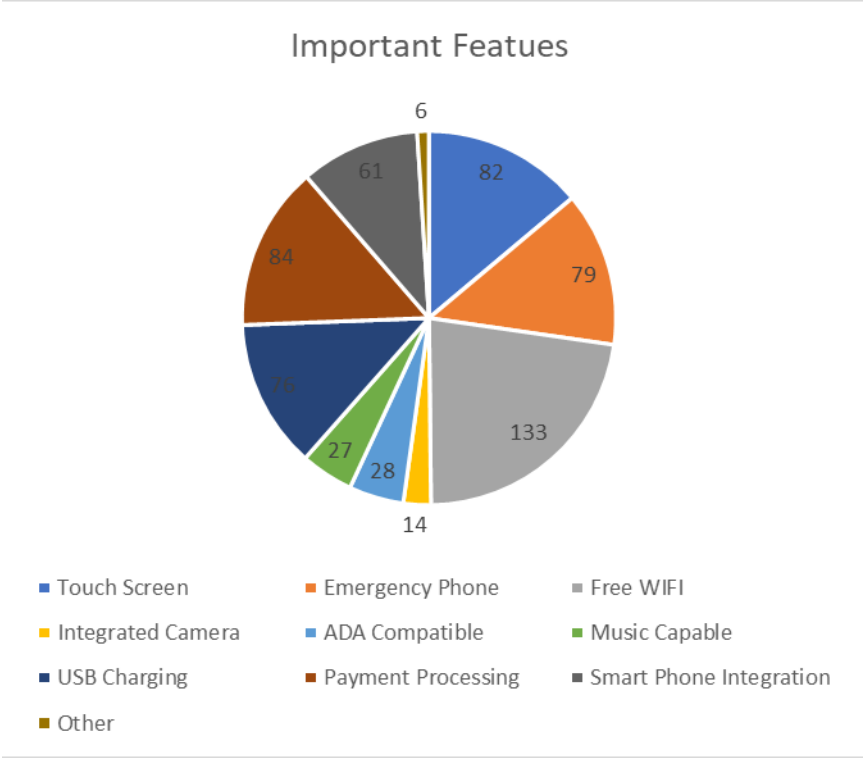
All-in-one Type Systems

Advantages	Disadvantages
• Quicker ability to deploy systems • Integrated, supported operating system and features with development teams • Some companies offer kiosks at little to no cost (covered through advertising revenue), including installation and maintenance	• High cost • Companies operating on an advertising model may not be interested in the Macon-Bibb market

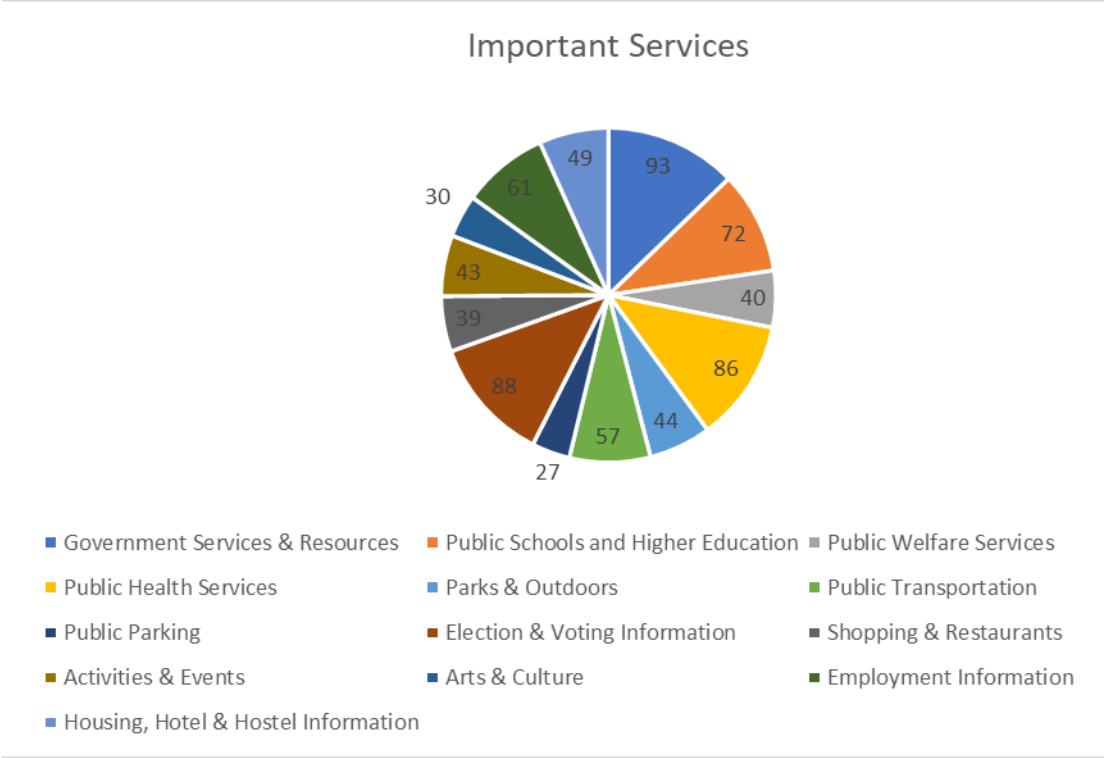
In House Build Systems

Advantages	Disadvantages
• Lower cost • More flexibility to choose operating system and features	• Shifts burden of programming and software development to in house staff • Limited support • Longer lead time for deployment

3. Determine community priorities for kiosk features and services



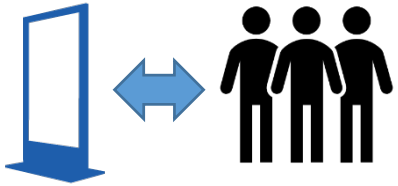
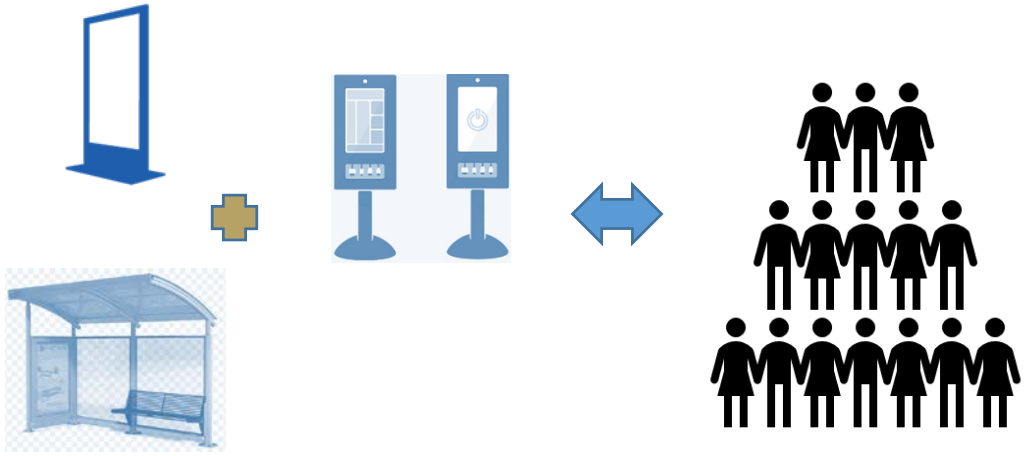
Free Wifi	Payment Processing	Touch Screen



Government Services & Resources	Election & Voting Information	Public Health Services

4. Develop prototype apps based on community priorities

5. Establish analytical strategies for community equity

		
ML/AI analytics	Prototype Kiosk	Community-level Scale up – Multiple Kiosk Types
Time series analysis & forecasting	Understand Patterns of Asset Usage	Optimize Kiosk Models with location and usage (E.g. For Hospitals. Community Centers, Public Transit, Sports/Recreational Facilities)
Association Rules & Recommendation	Identify Patterns of Content Consumption	Optimize information/content and delivery (messaging, apps, targeted advertising via images, video, interactive animation, etc.)
Clustering & Segmentation	Understand end user segments	Obtain deep, dynamic insights into community needs and concerns – helps improve policy impact, community engagement and equity

Asset , Usage and Consumer Analytics

Understand Patterns of Asset Usage

- Hours the Kiosk being used (Hours, Timing Patterns)
- Parts of the kiosk that see higher/lower usage (E.g. Keyboard Vs Touch Screen)
- Asset uptime / downtime information (Reliability/Availability)
- **Helps the manufacturer optimize future designs for this market**

Identify Patterns of Content Consumption

- What type of content is being consumed ? How often and how long per session ?
- What features or apps are more popular ?
- **Information will be used for data mining and creation of recommender systems/algorithms**

Understand end user segments

- Understand customer demographics (from images or metadata)
- Data mining will identify segments / clusters of peer groups
- A key goal is to understand end users and their choices/preferences in terms of when they access the kiosk, what type of content they like to consume it. This will **help optimize the usage and content to generate a higher ROI and community impact**

Digital Inclusion

- Affordable and reliable access to broadband internet services
- Availability of internet-enabled devices that meet the needs of the user
- Access to resources that enable digital literacy, self-sufficiency, participation and collaboration
- Quality technical support
- Intentional strategies to reduce/eliminate historical, institutional and structural barriers to the access and use of technology

~ National Digital Inclusion Alliance

Case Studies of Digital Equity Plans

Category	Strategy	Cities
Access	Support/Promote High Speed Internet and Reliable & Affordable Devices Access	Austin, Long Beach, Pittsburgh, Portland, SF, Seattle
	Prevent Potential Barriers	Austin
	Accommodate Vunerable Community	Austin, Chula Vista, Seattle
Capacity	Develop Central Capacity to Lead the Project	Long Beach, Philadelphia, Pittsburgh, SF, San Jose
	Promote Relevant Internal Capacity	Austin, Chula Vista
	Strengthen Relationship with Partners and Providers	Arlington, Chula Vista, Portland, Seattle
	Use Data and Analytics for Better Understanding for the Project	Chula Vista, Pittsburgh
Connectivity	Promote Inclusive Environment for the Citizens	Arlington, San Jose, Seattle
	Promote Integrated Technical Conditions	Chula Vista, Pittsburgh
Literacy	Promote/Understand Digital Needs	Austin, SF
	Support Techinical Training	Arlington, Long Beach, Philadelphia, Portland, Seattle
Opportunity	Consider Advanced Future Community	Chula Vista, Philadelphia
	Create Economic and Job Opportunities	Chula Vista, Long Beach, Portland
	Promote Educational Opportunity	San Jose
Policy	Promote Economic and Business Policy related to digital equity	Kansas city
	Promote Educational Policy related to digital equity	Kansas city
	Promote Digital Equity Policy for Better Understanding	Kansas city, Portland

Challenges & Recommendations

Challenges	Recommendations
Staff and Budget shifts	Plans for personnel and budget changes
COVID	
Community Engagement	Redundancies for survey data collection
Stakeholder Engagement	• Redundancies for stakeholder engagement • Development of evaluation plan
Prototype kiosk acquisition	Evaluate hardware associated with project • Costs • Feasibility • Transportation • Maintenance

Impact

"Macon-Bibb Government is honored to be recognized as an emerging GA Smart Community by the Georgia Smart Communities Challenge. **SmartNeighborhoodsMBC** as part of our overall **SmarterTogetherMBC** Smart City strategy provides support for each of our governing principles for Effective Government and Governance. **SmartNeighborhoodsMBC** promotes equitable access to technology in underserved and at-risk neighborhoods. **SmarterTogetherMBC** currently has a strong program in MaconInsights which is Macon Bibb's central location for open-data, citizen engagement, operations dashboards and interactive web mapping applications. The MaconInsights program provides the long-term sustainability for **SmarterTogetherMBC** and **SmartNeighborhoodsMBC**."

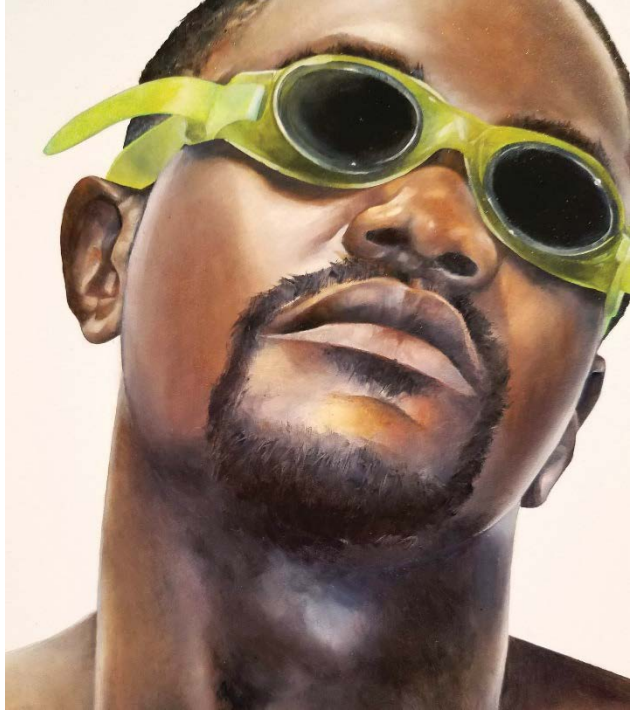
~Dr. Keith Moffett, Macon-Bibb County Manager

Future tasks

- Kiosk Acquisition
- Data analytics plan to understand usage, user and community equity
- Expansion of kiosk network
- Expansion of programming offered through kiosks

Future funding:

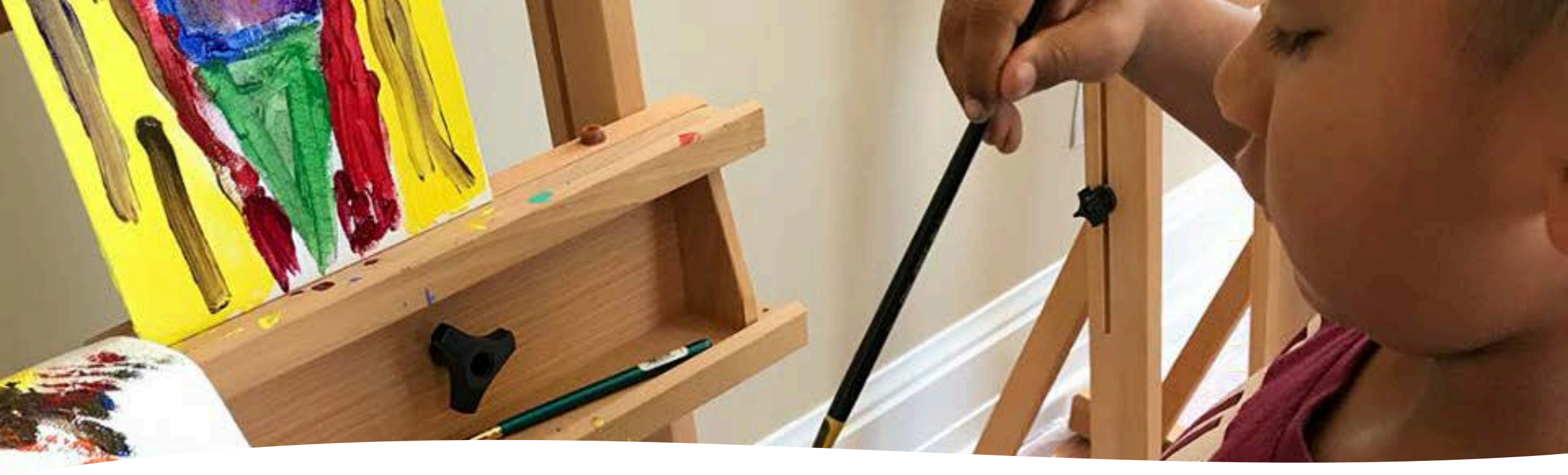
- Public –private partnerships for hardware acquisition
- Knight foundation
- NSF Smart and Connected Communities
- Foundation grants



Macon has a rich and diverse cultural landscape

It is our job to ensure that all neighborhoods have access to quality arts programming, both in their neighborhood and in the larger community.

macon arts alliance



What role did Macon Arts Alliance play in the project?

- Informing project leaders of cultural assets and needs in the community
- Suggesting Kiosk placement based on cultural needs
- Serving as an advisor on how to incorporate arts and culture into the project by
    - incorporating the community calendar Macon365 into the Kiosk https://www.macon365.com/
    - incorporating an interactive Cultural Asset Map into the Kiosk https://www.maconarts.org/map
- Presenting Macon's cultural landscape to Smart Cities challenge previous and current winners

How will this project benefit Macon Arts Alliance?

The Neighborhood Development priority identified in the Cultural Plan for Macon calls for addressing cultural inequity and facilitating neighborhood pride. By deploying a Smart Kiosk system in underserved and at-risk areas of Macon-Bibb County, we can

- Better involve the community in cultural initiatives
- Inform residents of cultural programming
- Collect data on where our cultural assets are located and where they are lacking
- Make informed decisions about supporting neighborhood cultural assets and where/how to increase access to creative programming

Project Team Contact Information

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